The Iron Age

A Review of the Hardware and Metal Trades.

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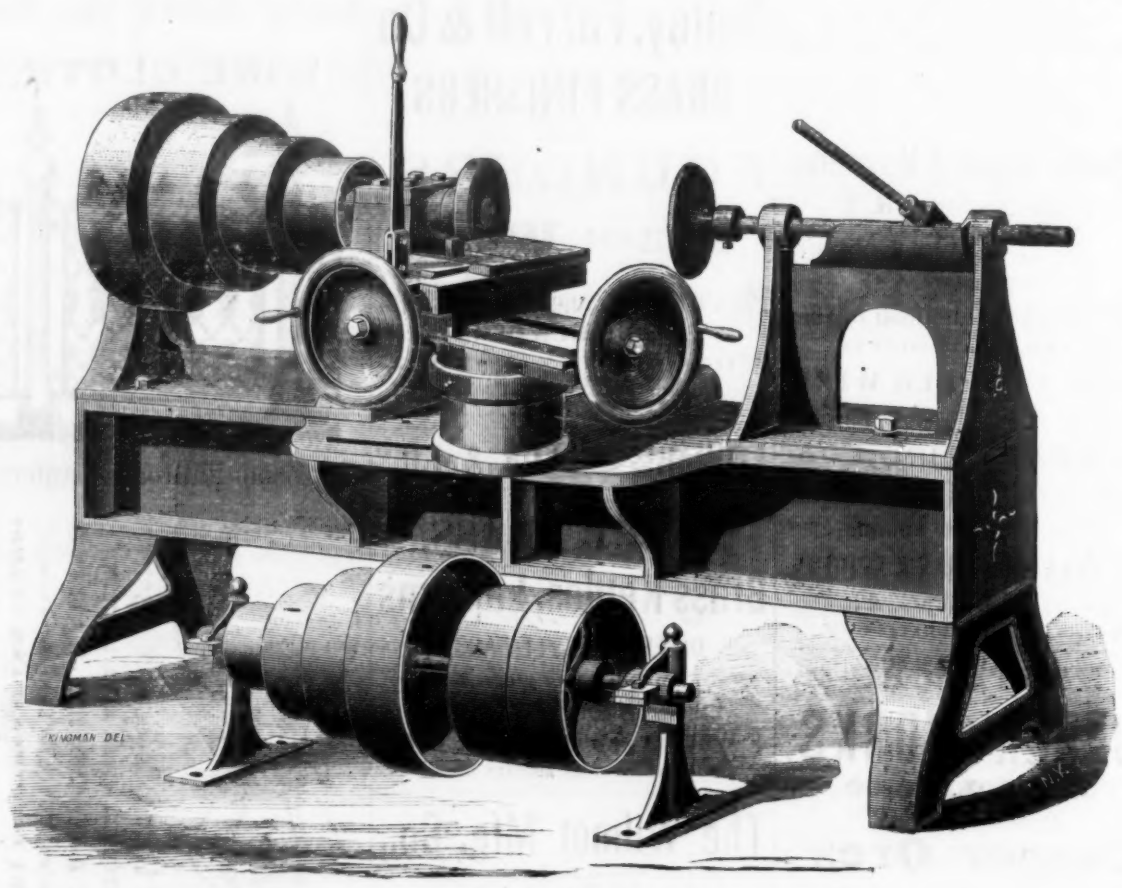
Bliss & Williams' Spinning Lathe.

As in all new trades, the manufacturer of stamped ware has heretofore been obliged to largely depend upon himself for tools. The first manufacturers of stamped ware had to build presses and tools. This latter has become a distinct branch of business, and now every tool required may be obtained without the trouble of building for one's self. Until very recently, the spinning lathe was a tool which each shop made for itself, and, though this practice produced convenient tools, yet they were not all that could be desired. The Spinning Lathe, which we illustrate, is made by Messrs. Bliss & Williams, 167 to 173 Plymouth street, Brooklyn, and is intended to supply the want which has been felt for a tool of this sort, and, at the same time to combine all the essential features. It is for burnishing, spinning, wiring and trimming stamped goods as they come from the drawing press. The weight of the lathe is 3000 pounds. Length, 77 inches. It will swing 28 inches over the bed, and 22 inches on the rest. The front bearing of the spindle is 2⅛ inches in diameter and six inches long. The cones are arranged for four speeds, they are 4-inch face, and respectively of 8, 11, 14 and 17 inches in diameter. The spindles are of cast steel, and the boxes of bronze, which is practically the best bearing that can be made. The speed of the countershaft is about 200 revolutions per minute. The lathe is furnished with a compound slide rest. The dies for the lathes are of cast steel, and we do not remember to have seen prettier pieces of metal under the turning tool. It finishes beautifully, and is of perfectly even grain, and great hardness. This tool fills a great want, and not only supplies the place of the home-made tools, but is much more convenient.

Messrs. Bliss & Williams have been doing a great deal of late toward the introduction abroad of American tools for working sheet metals. A great variety of their tools are used abroad, and are giving satisfaction. Several foreign journals have recently noticed their improvements in box making machinery, and spoken in high terms of its successful action. In seeking a foreign market for their productions, they are setting an example of enterprise which a great many manufacturers of improved American machinery might follow with advantage.



BLISS & WILLIAMS' SPINNING LATHE.

Experimental Researches in Bessemer Work.

BY W. MATTIEU WILLIAMS, F.R.A., F.C.S.

(Continued.)

Some readers, even at this date, will probably be puzzled by the foregoing statements, and suppose that I have contradicted myself; will say that if phosphorus thus gives hardness and tenacity, even to a greater extent than carbon, it must be beneficial, and that it may be used instead of carbon. This was exactly the reasoning that led to the errors I endeavored to refute in the letter to the *Chemical News* above mentioned. The conclusions of Dr. Miller, Dr. Paul, and many others, were based on the tenacity displayed by the ordinary method of testing, by a gradually increasing steady pull, the breaking strain of iron, steel and other substances. If steel only required such hardness and such tenacity, then phosphorus *would* improve it. Further examination, however, shows that this phosphorus hardness is treacherous; it is accompanied with most deleterious brittleness. Glass is very hard, and will resist a tremendous longitudinal strain gradually applied, but is shattered by a blow or any other sudden vibratory shock. This is just the quality which I found to accompany the hardness conferred on iron by phosphorus. It produces a glassy, rather than a steely, iron, and, in small quantities, is less damaging to soft iron than to hard steel, especially if the soft iron contains sulphur, as phosphorus and carbon both tend to neutralize hot-shortness. Karsten goes so far as to state that up to 0·5 per cent. phosphorus is not damaging to iron, but rather improving. This, however, is an exaggeration.

The trials upon which I based the conclusion that phosphorus is especially deleterious to steel were those made by the drop test, and by hammering or sudden bending. Steel containing phosphorus is more liable to crack, break or crush when thus tested, and if a tool with an acute edge, such as a knife, a carpenter's chisel, &c., is made of such steel, its edge breaks and becomes notched if, in tempering, it is left hard enough even for cutting wood.

The most decisive experiments, however, were not quite so direct and simple as these, and were suggested by the fact that there is a practical limit to the amount of carbon that can be added to Bessemer steel. If this limit is slightly exceeded the steel, when hammered or rolled, cracks at the edges; if it is largely exceeded, an ingot placed as usual under the steam hammer crumbles like sandstone, even at a welding heat. In some samples this occurs at 0·75 per cent.; others will bear 0·90, 1·00, 1·25 per cent., or even more, of carbon without crushing. Why should this be the case with Bessemer steel and not with shear or pot steel? was, of course, a very natural question. As the chief chemical difference between Bessemer steel and the best pot steel is that in the former the sulphur and phosphorus of the pig remains unremoved, while in the latter these are taken out in puddling, or do not exist in the charcoal iron, I naturally replied that it must be one of these, and accordingly made analyses for sulphur and phosphorus in all the Bessemer pigs and spiegeleisens that were used during a long period, and watched the results whenever a hard or highly carburetted blow was made. It soon became evident that the phosphorus was the main cause of this rottenness, for the crushing point of the hard ingots and the cracking points of the ordinary daily bending tests rose with the fall of the phosphorus and fell with its rise, *i. e.*, the greater the amount of phosphorus the less carbon the steel would bear. This was a really important discovery, so much so that Mr. G. Brown requested me to keep it as a trade secret, which I have done during his lifetime, but am now under no further obligation to do so.

A statement of all the details of these experiments would be rather tedious, but a general summary may be interesting.

The average crushing point of the Bessemer steel produced in the ordinary course of working was at about 0·90 per cent. carbon. The average composition of the Bessemer pigs and spiegeleisens used from July, 1868, to May, 1869, was as follows:

	Pigs.	Spiegel.
Combined carbon	0·469	3·886
Graphitic carbon	2·719	0·474
Silicon	2·830	0·772
Phosphorus	0·092	0·056
Sulphur	0·139	0·148
Manganese	0·879	6·761
Iron, by difference	92·892	87·903
Total	100·000	100·000

The range of phosphorus in the pigs during this period (with the exception of one delivery, of which I shall speak presently) was from 0·02 to 0·15 and in the spiegeleisen from 0·03 to 0·12 As the pig iron constitutes nine-tenths of the charge, and is the most variable, this, of course, was chiefly watched. The quality of steel varied during this time and with these materials. There were two classes of variation—one that happened in a particular blow of inferior quality as an individual variation among a series; this class was generally referable to silicon and bad work, as above described; the other class of variations occurred in series, *i. e.*, the steel generally, during a certain period, was better or worse than average, and this period corresponded with the use of a delivery of pig of certain brand and quality. It was with these that I was now concerned, and I compared these variations of quality respectively with the variations of silicon, sulphur, manganese and phosphorus, and found that they fitted neither of the first three, but came as nearly in accord with the variations of phosphorus as the limits of error due to commercial analysis, mechanical testing, and possible variations of individual casts from the same blast furnace demanded.

The following five cases, showing composition of different deliveries and brands of pigs, will illustrate this:

Constituents.	A	B	C	D	E
Combined carbon	0·62	0·20	0·50	0·37	1·25
Graphitic carbon	4·00	2·80	3·00	1·96	1·65
Silicon	1·40	2·33	2·00	4·08	2·15
Phosphorus	0·02	0·02	0·03	0·15	0·24
Sulphur	0·06	0·10	0·10	0·23	0·21
Manganese	0·38	1·92	trace.	1·15	1·10
Iron by difference	93·54	92·63	94·37	92·06	93·40

The deliveries of pigs, A B and C, produced the best steel ever made during the whole time I was at the Atlas Works, and the order of the quality, as estimated by George Brown, was as I have stated them. With "A," a remarkably fine sample of "Cleator" pig, very porous and abounding with "kish" (*i. e.*, spangles of uncombined graphite), and a selected spiegel, George Brown produced first-class tool steel, equal to pot steel, by charging it with 1·25 to 1·50 per cent. of carbon, which it bore without loss of weldability (pardon the word, on plea of its convenience). The steel from B was not quite as good, and from C slightly inferior to B, but both far above average.

D produced the worst steel that was allowed to pass, and the steel from E was so bad that it was condemned, and all the pigs returned to their vendor. This sample of steel was rotten, with only 0·50 per cent. of carbon.

The degree of superiority of A to B, with equal proportions of phosphorus, is explained by the abundance of carbon in the former. This is an important element in the excellence of Bessemer pigs. The lower proportion of sulphur is also advantageous, though not of the predominant importance that was formerly supposed. This is indicated in E, where the sulphur, although excessive, is less than in D. The usual statement that the Bessemer process does not remove any sulphur and phosphorus is not strictly correct. When the carbon is abundant, and the blow is consequently vigorous and prolonged, a small reduction of both of these (more of sulphur than of phosphorus) does occur.

George Brown assured me that, with good management, he could work with silicon as a substitute for carbon, and that an abundance of silicon is advantageous both for increasing the energy of combustion and the amount of cinder, but that to work with such iron the highest degree of skill is demanded, the blow must be carried on to the last moment, and the converter turned over only just before its contents begin to solidify. This is attended with some risk. I have had no opportunity of verifying this, myself, but have firm reliance in the accuracy and candor of Mr. Brown.

The practical applications of the above chemical generalizations may be made to contribute materially to the success of Bessemer work. I will first state their bearings upon the most common applications of Bessemer steel—rails and tires. Correct adjustment and uniformity of hardness is a primary desideratum; the rails should be as nearly as possible alike, and the tires a little harder than the rails. It is obvious, from what I have stated, that the most skillful and scrupulous regulation of the carbon element will fail to afford the required uniformity unless the proportion of phosphorus in the raw material remains the same.

According to my estimate of the relative hardening powers of phosphorus and carbon, viz., 3 to 1, steel made from pig D, containing 0·39 per cent. of carbon, will have about the same hardness as steel from pig A, containing 0·78 (the phosphorus of the spiegel is here neglected for simplicity of illustration), and therefore determinations of the phosphorus in pigs and spiegels are as necessary as determinations of the carbon in the steel. The importance of such determination becomes still more manifest when the other differences, beside mere hardness, are considered. Although, in the case just supposed, the D steel, with 0·39 per cent. carbon and 0·15 of phosphorus, may have the same hardness as the A steel, with 0·78 carbon and 0·02 phosphorus, it will by no means be of similar quality. It will be much more brittle, liable to fracture by vibratory strain, and less susceptible of that graduation of hardness obtainable by the tempering of true carbon steel.

Following up this difference, we arrive at a means of extending the Bessemer process to many other purposes than those to which it is commonly applied. All that is required for the manufacture of the best tool steel by the Bessemer process is to obtain pig iron equal to A or B, and spiegeleisen of corresponding quality. It is not impossible to obtain this, but there is some difficulty in so doing, a difficulty which 20/ per ton added to ordinary prices of Bessemer pig would doubtless overcome. This tool steel, of course, would demand the high percentage of carbon common to pot steel, which could easily be added, and with more certainty and uniformity than by the melting up of blistered steel.

But this is not all. There is a vast field open for the application of mild or semi-steel of reliable toughness and homogeneity. Bessemer steel iron practically free from phosphorus, and containing the lowest obtainable quantity of carbon, from 0·20 to 0·25 per cent., is invaluable for boiler plates. Its tenacity is nearly double that of iron, and therefore it need be made of but little more than half the thickness of iron plates. These Bessemer plates, being rolled directly from cast ingots, are free from lamination, blisters and other irregularities of piled plates, and, by virtue of their carbon, can better resist the action of the fire. Girders and other elements of structure might be safely made of this semi-steel. We hear of many projects to build steel bridges. With this material the advantages of greater tenacity than iron, without the danger of brittleness, would be attainable.

Another application of such material may be mentioned. I had some sheets rolled from ingots containing 0·25 per cent. carbon, and made from the same brand as A. These were sent to Messrs. Griffiths & Browett, of Birmingham, who stamped them into vases and cylindrical cups. They were beaten and spun from a flat circular blank of the sheet metal. The object of the experiment was to ascertain whether a homogeneous cast metal could be used for the manufacture of tin plate wares of superior quality. These are stamped first and tinned afterward. When ordinary sheet iron, although made from the best charcoal iron, is used, it often happens that a portion of the surface is formed of cinder—silicate of iron—that has not been completely squeezed out from the spongy mass of the puddled ball. This resists the tinning, and it has to be filed away, or the work, after much time and labor has been expended in shaping it, is quite spoiled and rejected as a "waster." The surface of the cast Bessemer semi-steel is perfect, and takes the tinning beautifully.

A multitude of other uses, such as steel pens, &c., might be named; but these are sufficient to show that there is still an unoccupied field for manufacturing enterprise in the establishment of a Bessemer work where only the fine quality of steel and steel iron, such as was produced from pigs A, B and C, should be made, and sold at prices corresponding to their quality. In such a manufactory no low priced heavy work should be attempted; and if by mistake a few blows of ordinary Bessemer steel should be produced, the ingots should be sold to ordinary rail makers, so that all the finished material bearing the brand of the works should be of uniform high class quality. A reputation would thus be acquired, and large profits obtainable; but, in order to secure such reliable quality, the whole manufacture must be based on scientific principles, and no stint perpetrated in reference to the analytical examination of all the materials used, and the strict chemical investigation of every failure in respect to the quality of metal produced. Small or moderate sized works, for high quality and high prices, rather than for large quantities, should be the aim. It might be advantageously affiliated with larger works, because there would, with every precaution, always be a liability to make inferior blows—by these I mean Bessemer steel which, though better than is now usually made, and useful for rails, &c., would not be good enough for the guaranteed quality that alone should bear the stamp of these works. There would thus be no absolute loss, even on the failures, and the high prices of the successful product would fairly reward the commercial enterprise and scientific skill demanded.

The Duty on Mica.—In the case of an appeal by the importers from a decision of the Collector at New York, assessing duty at the rate of 20 per cent. ad valorem as enumerated manufactured articles on so-called mica slabs, which importers claim to be exempt from duty under the provision in the free list for mica and mica waste, the department sustains the appeal, an examination showing that the merchandise consists of mica in its crude state, cut into slabs for convenience in transportation, for use in connection with the manufacture of stoves, which cutting, however, it is held, does not in any manner change the commercial character of the mica or constitute it a manufacture, so as to take it from the express provision for mica. It is also understood that no other form of mica is imported. An appeal of importers from a decision of the Collector at Cincinnati, assessing duty at the rate of 40 per cent. ad valorem on certain gold foil imported from Hong Kong, which the importers claim to be dutiable at the rate of $1·50 per package of 500 leaves as gold leaf, is rejected, an examination showing the article is not the gold leaf of commerce, but is gold foil, which is bought and sold by weight and used principally by dentists.

From an investigation of the combinations of the various metalloids with iron and manganese, MM. Troost and Hautefeuille draw the following conclusions as to the part played by manganese in iron making. The manganese employed in treating impure irons combines with the foreign matters, and it is these combinations, either dissolved or disseminated through the bath, which render its purification the more easy by communicating to the elements to be eliminated the oxidability suitable to the corresponding compounds of manganese. This is often the case, but the manganese also plays a simpler part, and one more easy to determine. The addition of ferro-manganese, a compound which is always rich in carbon, restores to the metal the carbon which it should contain, and reduces the oxide of iron, with disengagement of heat, both by its carbon and by its manganese. The oxide of manganese formed in and disseminated through the metal does not present the same inconvenience as the oxide of iron, for it passes almost immediately into the slag, taking with it other impurities. Thus, whether the manganese exist in the metal before its purification, or whether it be added after a prolonged refining, the important part which it plays in the metallurgy of iron is due: (1.) To the formation of compounds which are produced with a disengagement of heat greater than that due to the corresponding compounds of iron; and (2) to the easy scorification of these compounds, for they possess the property of oxidizing while disengaging more heat than those which contain the same proportion of iron, especially when these compounds occur, as is often the case in metallurgy, in the presence of a considerable excess of metal.

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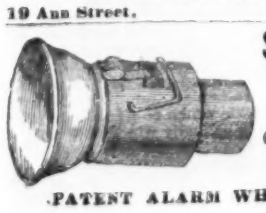

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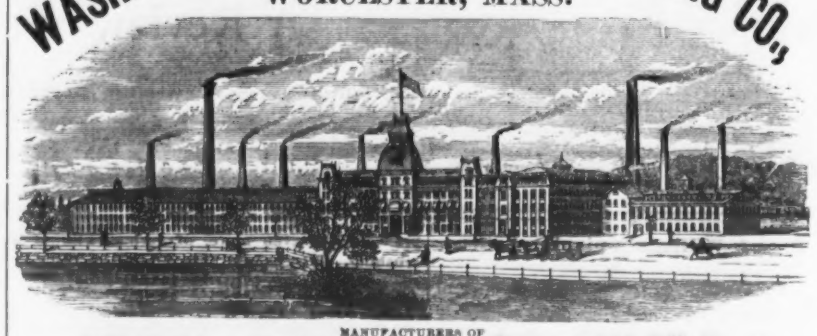

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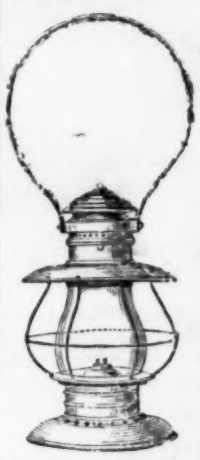

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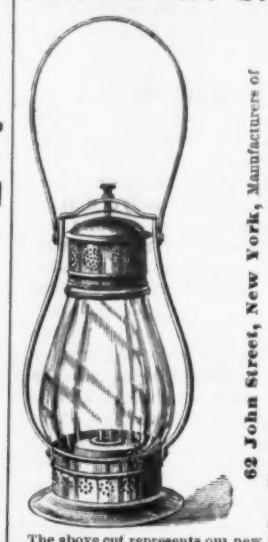

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The Russian stove is a large, clumsy, oblong mass that rises nearly to the ceiling of the room, to which it is a disfigurement rather than a decoration. This drawback has lately been noticed by Russian builders, and in some of the modern houses a kind of compromise has been effected between the Russian stove and the English fire-place, which, as regards cheerfulness, is certainly an improvement. English fire-places, with marble chimney pieces and fire irons, etc., are occasionally imported, but the duty and expenses are too high to make them a regular article of traffic. The Russian stove, as at present constructed, of white glazed tiles, is, doubtless, of Dutch origin, as the shape and size of the tiles is that which prevailed in Holland about two centuries ago; they are clumsy in appearance, heavy, and quite unsuitable for any kind of ornamental work. At the exhibition some of these tiles were shown: White, at from 7 copecs (2¼d.) to 15 copecs (5d.) each; and of a red color, 3 copecs (1d.) to 6 copecs (2d.) each. There is this peculiarity to be noticed in the glazed tiles manufactured in Russia—after being a short time in use the enamel invariably cracks all over, presenting a very unsightly appearance. There is another kind of Russian stove which is fast superseding the one just mentioned. It is of a cylindrical form, and is constructed of red brick, covered with sheet iron. It is cheaper than those constructed of glazed tiles, but does not retain the heat so well; and its gloomy appearance, and when the dark green color, with which it is generally painted, has been burnt and blistered tends considerably to mar the general appearance of the department in which it is erected.

The cooking stove used in the capitals has now almost entirely superseded the old-fashioned Russian *pech*. The former is fashioned somewhat like the English kitcheners, but they have this advantage that they can be approached from three sides; it consists of a thick iron plate set in brick and glazed tiles, with baking oven. Taking it altogether it is a clumsy contrivance, and takes up a great deal of room. It is used for boiling, frying and baking; appliances for roasting are not known except in a few of the elaborate kitchens of rich Russian gourmets. The pech is very much like a baker's oven, the whole arrangement being very primitive, beside consuming an inordinate quantity of fuel.

In the heating of a Russian stove, pine, fir, and birch wood are principally used; and it should be remarked that the embers play a most important part, for it is from the embers, not from the flame, that the stove is expected to derive its heat. So long as the wood continues in a blaze, whatever quantity may have been put in, the stove never gets thoroughly warm; it is only when by means of the "viewshka," a sort of double flue plate, that the passage from the stove into the chimney has been hermetically closed that the heat begins to be sensibly felt in the room. The Russian stove heaters are extremely dexterous in all the details of their occupation. Tongs and shovels are unknown to them. Their only instrument is the "kocherga," a long iron poker, with a hook at the end of it. With this they keep up stirring the fiery mass, break up the embers, and pull forward the fragments of wood that are still burning, in order, by exposing them to a current of air, to accelerate their conversion. In every great house there is at least one servant whose exclusive duty is to look after the stoves, and he collects and prepares the requisite fuel. In general he builds up a pile of logs within each stove the evening before, that the wood may be well dried, and then he sets fire to it early the next morning, using for that purpose the tarry rind of the birch. If the "viewshka," or damper, be closed before the wood be completely burnt into embers, carbonic acid gas and carbonic oxide are emitted by the coals, and fatal consequences may ensue to those who are exposed to its influence; the blue flame hovering over the bright embers is therefore carefully watched, and not until it entirely disappears is it considered safe to close up the stove. Accidents do occasionally happen, and it is nothing uncommon in Russia to hear of people who have been suffocated by the fumes of their stoves; but when the immense number of these stoves is taken into consideration, and that every floor and every part of the house has to be heated at least six months in the year, it must be admitted that accidents occur but rarely, and that an admirable degree of care is displayed in thus always selecting the proper moment for closing the damper.

The attention of Russian specialists has lately been directed toward the discovery of means of effecting economy in fuel, which is an important and expensive item in every Russian household, the reckless manner in which woods have been destroyed causing no little anxiety concerning the future supply. When we consider that the winter lasts 6 months, and that, at St. Petersburg, where the climate, although somewhat modified on account of the proximity to the sea, the thermometer, in winter, often points to 55°. Fahr., the imperative necessity for an improved state of things in this department is self-evident. At the Exhibition was shown a stove built, or rather cased in glazed tiles, with air-tight doors, adapted for burning coals, instead of wood,—a decided improvement. The price was 115 r. s. (£14. 7/6). Other stoves of the same kind were exhibited by a maker from Finland, for burning wood, at from 32 r. s. to 92 r. s. (£4 to £11. 10/) each. Iron stoves, of various other constructions, were also shown; but it would appear that in no instance was it demonstrated that the main object had been attained—the economy of fuel. There were steam-heating apparatus, hot water apparatus, priced respectively 80 r. s. and 75 r. s. (£10 and £9. 7/6); iron stoves, plain and ornamental, from 50 r. s. to 275 r. s. (£7. 10/ to £37); air-tight doors, iron, per pair, from 10 r. s. to 15 r. s. (£1. 5/ to £1. 17/6); the same of brass, from 22 r. s. to 30 r. s. (2. 15/ to £3. 15/).

Ventilation, the essential condition of sanitary economy of buildings, has ever been neglected in Russia, and it is only lately that efforts are being made toward providing for this desideratum. It should be observed that the houses in Russia, as early as October, may be said to go into winter quarters. Double windows are affixed to every room; every aperture through which a little air might find its way is carefully caulked with tow and then filled up with putty, or pasted over with slips of paper. Here and there a window is so constructed that a single pane may now and then be opened to let in a little air. In this close and confined atmosphere the family live and have their being till the returning May ushers in the warm weather, and gives the signal that fresh air may again be permitted to circulate through the interior of the house. The Russians have a saying—"*Par kostay ni lomit*"—literally, "Steam does not break bones," meaning that heat can not be injurious. This conviction is perhaps the reason why a temperature of 15° Reaumur (38¾° Fahr.) in the bedroom is in no way considered excessive or injurious. There can be little doubt that the lassitude and prostration often experienced during a Russian winter, notwithstanding the invigorating effect of out-door drives or walking exercise in sharp frosts, is attributable in no small degree to the excessive heat of the rooms and the insufficient ventilation. Here there is a wide field open for our countrymen. An invention that would combine economy of fuel with efficiency as to heating would be sure to meet with an enormous patronage all over the empire.

Like all large cities of Europe, the capital of Russia has introduced gas for lighting purposes. Three ineffectual attempts were made to light St. Petersburg with gas before the establishment of the present two companies. The first was during the reign of Alexander I, when, just as all arrangements were complete, the buildings caught fire, and the plan was abandoned for some years. The second attempt was made after the accession of the late Emperor Nicholas. The high and ungainly building intended for the gas holder was injudiciously placed near the Winter Palace, and formed so prominent a deformity that the emperor was glad, in 1838, to buy up the whole of the premises belonging to the company, for the purpose of pulling them down. The company then went to work again, and in the autumn of 1839, when people were beginning to look forward to light streets in winter, the whole illumination was opened and closed on the same day by a frightful explosion, by which the gas holder was destroyed, a number of people were killed, and the money of the share-holders was lost. Shortly afterward, gas works were erected in the suburbs by an English firm, which was a complete success, and has continued so up to the present time. It is only recently that another company of the same kind has been formed; the work was also executed by an English firm. The coal is imported from England, and the price of gas per 1000 about 10/6. It must be admitted that the streets of St. Petersburg, wherever gas has been introduced, are better lighted than they are in London; the number of lamps is greater in a given distance; the burners and quality of the gas is better; the lamp posts, also, better finished, and certainly ornamental when compared with the regulation pattern used in London. Gas does not find its way so readily inside the houses; it is confined entirely to the yards, staircases, etc., except in public establishments, shops, hotels, etc., where the fittings are always of the roughest description. Glass globes are never seen on the chandeliers. A short time ago an English company was formed in London—the Moscow Gas Company—who undertook the construction of works in that city. More than 40,000 lamps have already been erected. All the large factories and works in the neighborhood of St. Petersburgh have their own gas works, and they have been introduced in the interior establishments of the same kind, as well as on manorial estates. England supplies nearly all the work.

Iron, as applied in this country for various architectural purposes, such as girders, house railings, large bridges, etc., is but very little used in the capital, and, consequently, in all other towns, as an exception, may be taken the railings of squares and gardens. At the Exhibition there was only one girder exhibited by a government establishment. The northern side of the summer gardens of St. Petersburg is celebrated for its iron railings with the fanciful garlands and arabesques, which, people say, an Englishman once traveled all the way from London to see, and make a sketch of, and then returned, satisfied with his journey, not deigning to cast an eye upon any other monuments of the city. However, it is a very elaborate specimen of iron founding, and scarcely to be equalled anywhere.

In a sanitary point of view, St. Petersburg, and, in fact, all Russian towns are in a deplorable condition. Drainage is unknown in the capital, except in the immediate vicinity of the river, which is a serious matter for a town containing something like 700,000 inhabitants, and which is proved by the chronic prevalence of Asiatic cholera. The houses, as a rule, are veritable whitened sepulchres; the effluvium from the latrines and dust holes is horrible. The general and special smells of St. Petersburg in the spring and summer are hardly to be matched in any part of Europe. It is only on the recent outbreak of cholera that stringent measures have been taken with a view to mitigate the evil to some extent by imposing fines upon the landlords. But all this is useless; and until a proper system of drainage is introduced matters are likely to remain much in the same condition.

Some few years ago water works were established. Until then all the water had to be carried in huge casks from the canals and river. It would appear, however, that comparatively few have availed themselves of the luxury of Neva water brought into the houses, the supply being confined chiefly to the streets, where several public fountains have been erected, from which the houses in the vicinity are supplied.

With the extension of the system of railways the towns of the interior are beginning to wake up also. Finding a necessity for a constant and uninterrupted supply of water, they have introduced water works, for instance, in the towns of Vladimir, Saratof, Kharkof, Nijni and Novgorod. The construction of these establishments in Russia affords many facilities, on account of the numerous rivers, and at the same time great difficulties, owing to the action of the frost upon the pipes if not sunk sufficiently deep. The important town of Odessa is only now beginning to adopt the present system of water supplying. Situated in a locality where there are neither springs nor rivers, it has until now depended entirely upon well, rain water and a brackish water supplied from an aqueduct yielding about 300,000 gallons daily.

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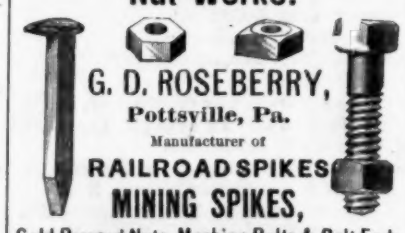
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"The World" on Dynamite.

The various accounts of disasters happening from the careless use of nitro-glycerine, dynamite and the like, has started the "scientific man" of the *World* on the war path. He says: "Now, it is probably impossible, even if it is desirable, to prevent the use of nitro-glycerine. It does its work so thoroughly that in spite of its dangerous character men will continue to use it until some better explosive is discovered. The question which needs immediate consideration is how to transport nitro-glycerine and its compounds with perfect safety; and perhaps the best answer to this question is that nitro-glycerine should never be transported in its manufactured state. To compare small things with great, reference may be made to that familiar domestic explosive, the Seidlitz powder. As is usually known, this article is sold in separate packages, either of which is inert when unmixed with the other. It can be handled, burned, dissolved, or swallowed with impunity. When, however, the two packages are suddenly brought together in a glass of water, they combine with an explosive force that has, in countless cases, shocked the stomach of childhood and astonished even the stouter interior of strong men. Why should we not treat nitro-glycerine as we treat Seidlitz powders? Glycerine in its normal state is perfectly innocuous. Nitric and sulphuric acids, when in a pure state, are, of course, to be handled with care, and when used as beverages are usually found unpalatable, except by the patrons of corner gin-shops. Still these acids do not explode, and they can be carried from place to place without the slightest danger. If, then, persons intending to use nitro-glycerine were to procure it in the shape of simple glycerine and unmixed acids, and were to unite those ingredients only when the time for using nitro-glycerine had arrived, the public would no longer be put in peril by the transportation of nitro-glycerine over our railways and through our streets. If we can only induce men engaged in blasting to mix their own nitro-glycerine, instead of buying it ready made, we shall be delivered from the dangers which now menace us; and we may regain that simple faith in boxes, barrels and tin cans, which formerly sustained us in the presence of loaded express wagons, and enabled us to pass a laboring man carrying a tin can without fearing that the entire neighborhood would vanish were he to accidentally drop his burden on the pavement."

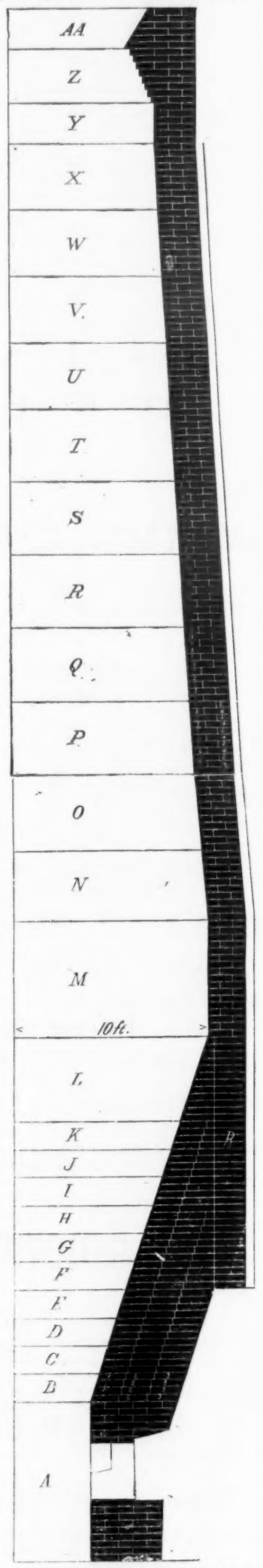
We wonder whether this "scientific gent" would not think it would be a good plan to do the same thing in the case of gun powder. When we wished to blast a rock or fire a gun, pour into the hole a little charcoal, with the proper proportions of niter and sulphur, and so form the gun powder when we wanted it. Evidently the man had got a vague idea of what is actually the case. The transportation and handling of nitro-glycerine is by no means such a wide source of danger as he supposes. In most places where it is to be used in any considerable quantity works are established, and the nitro-glycerine manufactured in the immediate vicinity of the place where it is to be used, so that wholesale transportation is not necessary. But the idea that every man who wants a little nitro-glycerine is to buy the glycerine and acids and prepare it by simple mixing is very funny, almost as funny, in fact, as the following story from the Virginia (Nevada) *Enterprise*, of Jan. 12: "Yesterday morning, at the blacksmith shop of the Vivian mine, west of Silver City, a singular and startling explosion occurred, by which two men were severely injured. It appears that a bucket of water was being thawed out at the fire on the forge. There were four men in the shop, and while one of them was in the act of lifting the bucket off the fire it exploded with great violence. The bucket was torn to shreds, and Samuel Tangie, blacksmith, and George F. Oxton, miner, were struck and wounded by the flying pieces—the bucket being made of sheet iron. The two men were cut in several places, but their principal wounds are about the legs, the direction of most of the flying pieces of iron being downward. The explanation of this curious explosion undoubtedly is that a giant powder cartridge had been thawed out in the bucket and that its sides, and probably the surface of the water, were coated with a scum of oily matter (nitro-glycerine) boiled out of the cartridge."

We might have expected it. If a bucket of cold water, a lump of iron, a snowball, or any other highly explosive substance goes off knocking into numerous pieces the too confiding spectators, the story can generally be traced to the highly imaginative *Enterprise* of Virginia City. We presume they are explosions of the imagination. If a bunch of fire-crackers, a box of torpedoes, a can of powder, or a box of parlor matches, explodes or burns in a hurry, we are startled forthwith by a long account of a nitro-glycerine explosion, with harrowing details, and all the horror known to sensational literature of the day.

The following method of tinning various metals in the humid way is given by Wegler: A solution of perchloride of tin is first prepared by passing washed chlorine gas into concentrated aqueous solution of tin salt, and expelling the excess of chlorine by gently warming it, then diluting it with eight to ten times its volume of water, and filtering it, if necessary. The article, well pickled in dilute sulphuric acid, and polished with sand and a steel scratch brush, and rinsed with water, is loosely wound with a zinc wire, and immersed for ten or fifteen minutes, at the ordinary temperature, in the dilute solution of perchloride of tin. When tinned in this way, it is raised, brushed with a scratch brush, dried and finally polished with whitening. This applies to tinning cast iron, wrought iron, steel, copper, brass, lead and zinc.

Pittsburgh Furnaces and Linings.

We give in the accompanying illustration half of a vertical section of the Lucy Furnace, at Pittsburgh, showing accurately the lines, and, in the smaller cut, a top view of two courses of brick, showing the method of breaking the joints. This also represents very



HALF SECTION OF THE LUCY FURNACE, PITTSBURGH.

nearly the lines of Isabella No. 1, now in blast, the only difference being in the boshes, which are 18 feet, and in the part immediately above the boshes. It will be noticed that the section

METHOD OF BREAKING JOINTS IN THE COURSES OF FIRE BRICK.

marked M is straight in the Lucy, forming in the furnace a complete cylinder 20 feet in diameter. In the Isabella the line from the bosh to the tunnel head is unknown.

The first lining used by these two furnaces, as well as Isabella No. 2 and Soho, was made 24 inches in thickness, of two lengths of brick. The cut marked N 1, N 2, N 3 and N 4 gives a top view of two courses of these bricks. The first course being made with a 16 inch and an 8 inch brick—together forming the 24 inch lining. In the next course the joints are broken by using an 8 inch brick inside and a 16 inch brick outside. This plan has been found to work well, but it is evident it would do better on a 30 inch lining, when the brick could be made in 18 inch and 12 inch lengths, and thus obviate the necessity of using anything so small as an 8 inch brick. But, we believe, the true idea is to make the whole lining in one length of brick, provided that as perfect brick could be made this size as the smaller sizes. It has heretofore been considered impracticable to make even a 24 inch lining brick in one length to bed accurately and with the radial joints true, the amount of breakage and labor in making being, proportionately, so much greater than in the small tile. Messrs. Harbison & Walker, however, seem to have demonstrated that a 30 inch lining brick can be made at a reasonable cost, and one that will work as accurately as a smaller brick. The great advantage in a lining of this thickness, all in one brick, will be evident to the most casual observer. In the lining first referred to, should one of the 8 inch brick from any cause whatsoever get worked out of place (and being so small, could easily be dislodged if the masonry was in any way defective), the result would be that in a short time, by the gravity of the materials inside the furnace, the 16 inch brick next above would be broken off, having lost 8 inches of its support; then would follow the 8 inch brick, and *vice versa*, until the top is reached. Thus 8 inches of the lining could in a very short time be lost on one whole side of the furnace, from one defective brick. Such a disaster would be effectually avoided by using one long brick. Another great objection to so long a brick as 30 inches has been the difficulty in getting them thoroughly and uniformly burned. This seems to have been overcome effectually, thes amples we have seen being burned so hard from end to end that a cold chisel is necessary to cut them. They are almost as hard as cast iron, and at the same time highly refractory. An inspection of the 30 inch brick now being delivered to Isabella Furnace Company, for No. 2, seems to show this.

The New Water Works of Bristol, R. I.

The Bristol *Phœnix* says: The new apparatus, for furnishing water in the compact part of this town, in case of fire, is now nearly completed. A trial of the pump, pipes, coil, boiler, etc., was made on Saturday last, and gave great satisfaction to all interested. We have now nearly 10,000 feet of iron water pipe, laid through the streets in such directions as to enable the fire department to reach almost any building—with hose attached to hydrants—in the thickly settled part of the town in case of fire. Over 4000 feet of this iron pipe has been put down during the last fall and present winter. Twenty new non-freezing hydrants have also been recently added.

A new pumping station has been erected on the west side of Thames street, near the foot of John street. A Knowles' pump is used for forcing the water, which is taken from the harbor. The pump has a 22 inch steam cylinder, 12 inch water cylinder, and 24 inches stroke. The Herreshoff safety coil boiler, used for generating steam, is made of three inch steam pipe, about 550 feet in length of pipe. Inside of this long pipe coil the diameter is six feet; hight, 8 feet; grate, 6 feet; the smoke jacket is an outer casing of sheet iron.

At the time of the trial of the boiler, pump, &c., no especial haste was made in getting up steam, but in five and a half minutes from the time of lighting the fire, steam was generated. At nine and three-quarter minutes the large pump was in full operation. The steam pressure was kept at about 100 pounds, and part of the time blowing off at the safety valve. The long length of pipe was quickly filled, and eight lengths of hose were attached to hydrants more than half a mile away from the station, four of which were 1¼ inches, and four of 1 inch, each playing from 100 to 125 feet in hight, and where these hydrants were situated—on Wood street—is some 40 feet above tide water.

The pump was worked under the direction of an agent and workman from the manufactory where it was built. Large numbers of our citizens, with the committee who had the matter in charge, witnessed the trial, and were delighted with "the way things worked."

The coil boiler is the largest of the kind ever made by the Herreshoff Manufacturing Company, and has proved a great success. Competent judges inform us that it is capable of furnishing 400 horse-power.

Our facilities now, for extinguishing fires, appear to be as complete as could be desired, and will compare favorably with the best provided towns in this country. Rates of insurance ought to be as low here as at any place in the Union.

The following is a new metallic alloy which is now very extensively used in France as a substitute for gold. Pure copper, 100 parts; zinc, or preferably tin, 17 parts; magnesia, 6 parts; sal-ammoniac, 3·6 parts; quicklime, 1·8 parts; tartar of commerce, 9 parts, are mixed as follows: The copper is first melted, then magnesia, sal-ammoniac, lime and tartar are added separately and by degrees, in form of powder. The whole is next briskly stirred for about half an hour so as to mix thoroughly, after which the zinc is added in small grains by throwing it on the surface and stirring it till it is entirely fused; on this being done the crucible is then covered and the fusion maintained for about 35 minutes, after which the surface is skimmed and the alloy is ready for casting. This alloy has a fine grain, is malleable, and takes a splendid polish. It does not corrode readily, and for many purposes is an excellent substitute for gold.

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For each additional constituent of usual occurrence	1 50
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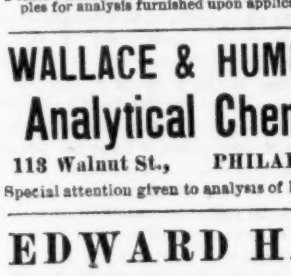

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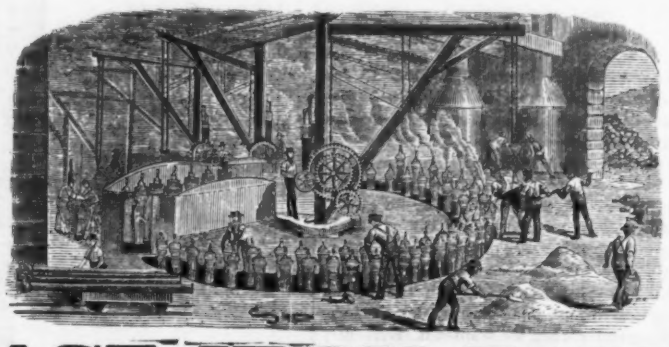

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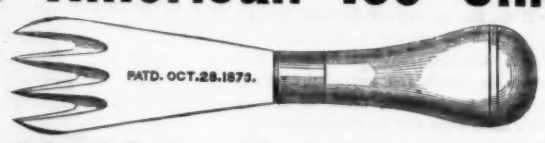

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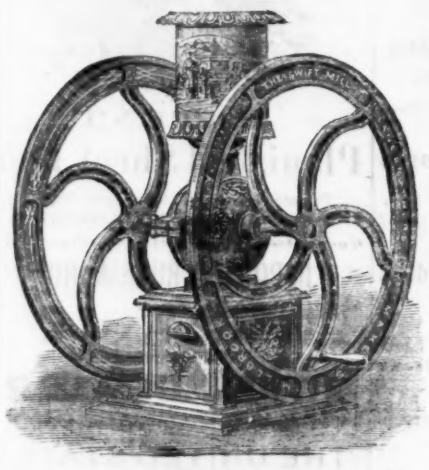

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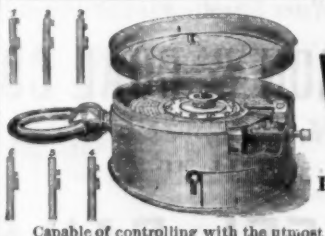

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CAUTION.—The public are notified that in my suit against Imhæuser & Co., of New York, a decree was made in my favor, June 10, 1874.
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☞ In sending for circular or ordering the above, please mention this paper. ☜

One of the Perils of Ocean Steamship Navigation.

Captain S. P. Griffin, in *Van Nostrand's Magazine* for March, has an article on this subject which is worth the careful consideration of all interested in ocean steamers. He says:

Seamen believe that the perils of ocean navigation can be very much lessened by correcting some of the evils which are well known to them. Fatal disasters to large passenger steamships are, in many instances, attributed to causes well understood beforehand, and known to have their origin in the continuance of a certain custom on board vessels, and in the unfitness of certain aids to navigation. From among the questions relating to the sea that demand attention, I will select two for discussion in this paper; the first one is the danger arising from "Watch and Watch."

From the earliest times to the present, in the internal economy of vessels, both large and small of all nations, in every sea, it has been, and still is the custom, to divide the crew into two watches, working what we designate "watch and watch," that is to say, four hours on and four hours off duty alternately. This plan of work in the days gone by, when vessels were comparatively few and small, and when time was of less value than it is now, apparently did not obstruct or interfere with the prosperity or the growth of commerce, or the successful navigation of the ocean, but, however well it has subserved a useful purpose in the past, it certainly requires to be changed so far as it is applicable in the present to the mates of ocean going steamships. The exigencies arising from the immense fleets, at all times, in every sea, sailing and steaming in every direction, upon all points of the compass, and the wonderful increase in the size and speed of first-class passenger steamships, render it absolutely neccessary that, with a proper regard for life and property, the deck at all times must be in charge of a man of well ascertained mental and physical abilities. Yet, it is a fact very well known to the initiated, that the custom of "watch and watch," will at times so impair a man's faculties, when thorough efficiency may be most urgently required, as to render him wholly unfit to discharge his important duties; within the experience, and subject to the observation of every one who goes to sea, is the significant reality that a man can not day after day, night after night, in good weather and in bad weather, preserve himself in a condition that qualifies him for every emergency, that inevitably sooner or later, at a critical time, he will be found wanting, and the most serious consequences may become involved in his temporary deficiency, even unto the total loss of the steamship with all on board; hence it is that those ashore hear of the most unaccountable shipwrecks; hence it is that sweet water critics can see the error of judgment, can detect the mistake in navigation, which was the immediate cause of an appalling disaster.

I will describe the duties of a mate at sea, a mate who is intrusted with a watch, he who has charge of the deck of a steamship, freighted with 2000 tons of cargo and a thousand human lives; the steamship runs at a speed of 14 knots an hour across a crowded sea, upon a dangerous coast, in sunshine or in darkness, in rain or in fog; it is all the same, on she goes with life or death awaiting her, depending to a considerable extent upon the skill, courage and self-possession of this man. His station is upon the forward bridge, within easy call to the man at the wheel, close to the standard compass, and to an engine bell pull. He must not on any account leave it, unless he is regularly relieved. He must keep on his feet, in constant motion, to see that the ship is on her assigned course, that proper sail is carried, that the yards are trimmed, that order is maintained about decks, that the rules concerning lights and fires are obeyed; he must keep a bright look-out ahead and all around, he must listen for unusual sounds, he must be ready to detect unusual smells, he must be unceasing in his vigilance during the period of his watch. After he is relieved at the termination of his watch, he must write in the deck-log the remarks that he thinks are necessary to keep up the narrative of the voyage, he must see that the proper entries are made of barometric and thermometric indications, of the direction and force of the wind, the character of the weather, of the sea and the speed of the ship, he communicates with his relief, and he goes below. This is an outline of the duties when off watch, or in his "watch below," as it is called: He has to take and work out observations for latitude, for longitude, for variation and deviation, and every day, soon after meridian, he must send in to the captain a carefully prepared report of his "day's work," he must attend quarters for fire and boat exercises, he must be always ready to respond to any sudden call for all hands, he must by his example and his teaching help to inspire confidence, and to maintain discipline.

Let us now enter into a brief examination of the effect of this custom of "watch and watch" in its application to mates of steamships. Let us endeavor to understand its operation for good or for evil, as it now prevails upon hundreds of them on duty in every sea. Let us learn if there are not dangers of the deep that are probably never thought of, or even known to exist by those who own the steamships, or by the thousands of passengers who go from port to port in them.

Of the twenty-four hours that compose a day, the mate who stands his "watch and watch," spends twelve of them upon the bridge in charge of the deck. In being called ten minutes before the termination of a watch, so as to be ready to relieve when the bell strikes, and in occupations after it one and a half hours are consumed; at his meals, smoking, and another thing or two, three hours; in observations, day's work, reports, exercises, and what not, one and a half hours more, making in all eighteen hours, thus leaving him only six hours for sleep, to be picked up at intervals between the watches, as best he can, subject to innumerable disturbing influences. Is this amount of rest, and the way of getting it, enough for a working man anywhere? is it enough for a man who is exposed to the severe trials of a hard winter in our wild North Atlantic? Do we not see from this that it is beyond the power of human endurance to keep up under it? May we not here begin to find an explanation for some occurrences which in their mysteries have hitherto baffled investigation? I assure you that the custom of "watch and watch," the custom that compels a man to undertake more than he is capable of doing, is the ultimate cause of many of the heart rending disasters which have come to us from the sea.

I will present an every day case to you—it will be at once recognized by any person who is familiar with the "way things are done aboard ship." It may be in a prolonged gale of wind, in winter, cold, black and gloomy, spray flying everywhere, and freezing where it falls, the decks are slipping with ice, and dangerous from the violent motion of the ship; or it may rain incessantly, or it may be an impenetrable fog. The mate who takes charge of the deck at Meridian, is relieved at 4 p. m., and soon afterward he goes below; he gets his supper, enjoys his smoke, and at 6 p. m. again takes charge of the deck for the second dog-watch, which terminates at 8 p. m. As soon as he is relieved he writes up the deck-log, then hurries below, shakes off his dunnage, and by one bell—half past eight—he is turned in and asleep. At ten minutes before midnight he is called for the mid-watch, from 12 to 4 a. m. He has had less than three and a half hours sleep; he went below in wet clothes, he comes on deck in wet clothes, aching and weary from past exertions and insufficient rest. He takes charge, he receives the course, the orders, a statement of the condition of things; he inspects the compass, speaks to the man at the wheel, hails the look-out, cautions the "watch" to stand-by, he shakes himself for warmth, and commences to walk the bridge; he exerts himself to be faithful to his trust, to discharge his responsible duties to the best of his abilities, but, before the termination of his four hours, the time begins to drag wearily along, and at last he becomes conscious of his weakening faculties, aware of the danger that will attend his neglect, and of the accountability to which he will be held, he makes a struggle with himself, and barely succeeds in keeping himself awake; those who keep "watch and watch" in charge of the decks of steamships know all of this well enough; those who have not had the experience, and who doubt the accuracy of the statement, can easily find proof of it, if, in the next passage they are going, they will faithfully stand the watches.

Thus far I have spoken of the mate who has "eight hours in," who goes below after 4 a. m. and turns out again before seven bells—half past seven. Then how much more trying will be the case of the mate who has "eight hours out," he who keeps the watch from 8 p. m. to midnight, and again the watch from 4 a. m. to 8 a. m. Is it not utterly impossible for him to look to windward in a northeast snow storm eight hours of a night? Is is not beyond human endurance to remain in a freezing atmosphere, exposed to the fury of wind and sleet, for that length of time, holding on like grim death against the heavy laboring of the ship and not impair the powers of mind and body, the whole strength of which may be on the instant necessary for the safety of the ship? Most persons who travel by sea, if they trouble themselves to think at all about such things, believe that men are able to do it, that they get hardened to that sort of thing, you know, until at last they do not care the least bit about it. The timid, as they lie stowed away in soft blankets in the warm bunks of the after cabin, would shudder at the frequent narrow risks they run if they did but know of them; they would be overcome with horror at the thought that in the dark and fearful night a weary worn-out mate is straining his imperfect vision to make the dim outline of the rock bound shore, upon which the ship is madly rushing; and he cannot see it, nor can he see the approaching sail, nor the warning rays of a light, nor hear the indistinct roar of breakers, nor the feeble tones of a bell, nor catch the presence of unusual elements on board nearly so well as when he is in good condition.

A mate does not complain about the dangerous effects produced upon him by the custom of "watch and watch;" he does not confess his absolute physical inability to thoroughly fulfill all of the requirements of his position, for the alternative as the economy of the ship is managed, and of which he has the greatest dread, is to discharge him with a black mark against his name, and to ship another in his place who will not growl and grumble at his ordinary work. Therefore he keeps his troubles to himself, the evils continue unabated, and it happens at last, that a steamship with her freight of life and riches runs swiftly on to meet a terrible fate without a single timely effort having been made to preserve her.

Hence it may be safely declared that risks of collision, of stranding, of fire, in short all risks pertaining to the sea will be very much lessened if the decks of vessels are always left in charge of intelligent men refreshed by sufficient sleep in comfortable quarters, instead of others completely exhausted by excess of work and prolonged exposure. I conscientiously believe that many of the disasters to ocean going vessels are due to the dangers that I have tried to explain, and to others well known to seaman and such as are within the control of man's capacity as a reformer.

Another word or two upon the dangers arising from the custom of "watch and watch" at sea. It is not only in dark or foggy weather that accidents occur, it is not only in long continued winter gales that ships are lost; but with the moon and stars shining out in all of their glory, in a beautifully transparent atmosphere, in warm tropical nights, in unruffled water, in a dead calm, vessels run into each other, and others run squarely ashore. The drowsy mate could not see, or seeing could not comprehend, or did not act in time to avert an impending calamity. Instances of this kind are by no means uncommon, and I could easily relate a number of them perfectly well authenticated, but in doing so I might make invidious distinctions, and direct censure where, as we have seen, there may be mitigating circumstances in the case. But proofs may be found in the marine columns of the daily newspapers by those who know what meaning to put upon the reports.

The reform that is necessary to correct the evils spoken of—the change in a long established custom of the sea, that will oftentimes save ships from destruction, is not in itself a very great one, it is inexpensive, and it can be made at once without any derangement of good order and discipline—it is this: Put mates of ocean going steamships in three watches, instead of keeping them in two, give them four hours on and eight hours off watch.

As steamships are manned now, this change can be made without any increase to the compliment allowed to them, therefore there will not be any expense attending it.

Let us inquire into the operation of the three watches rule, and see how it affects the mates. He who takes the watch from m. to 4 p. m. has time for his supper, a smoke and a snooze, before he is called for the first watch. At 8 p. m. he is again on the bridge, where he remains until midnight, he then goes below until 8 a. m., then, once more, he takes charge for the forenoon watch, under this rule he has eight hours in every night, he has time to take proper care of himself, to dry his clothes, to keep his room in order, to be accurate in his day's work, and, far above all else, he is strong in body, clear headed and self possessed, when he takes charge of the deck—he fully and faithfully performs the duties as officer of the watch.

Kenton Furnace.

The Greenup *Independent* gives a history of Kenton Furnace, from which we quote as follows:

In June, 1853, Mr. John Waring commenced the erection of Kenton Furnace, on Big White Oak Creek, in the county of Greenup, six miles from Quincy, on the Ohio River, constructing a stack of 32 feet high by 10 feet across the boshes. Work was pushed ahead so energetically that in the spring of 1854 blast could be put on, and for three consecutive years the furnace, under Mr. Waring's sole control, gave good satisfaction, averaging some six tons daily.

In order to carry on operations on a larger scale, Mr. Waring associated with him in 1857 Messrs. Partlow & Fox, who then continued the manufacture of iron until 1858 when due to a want of ready means, the firm of Waring, Partlow & Co. was forced to suspend.

The property was, thereafter, on the 7th of May, 1863, sold to its present owners, C. A. M. Damarin & Co., Ellis, McAlpin & Co., and R. Bell & Co., who soon thereafter constituted themselves into the Kenton Furnace, Railroad and Manufacturing Company, under a charter granted by the Legislature of Kentucky.

After thorough and complete repairs of the buildings, houses, etc., and the stack having been changed to 37½ feet by 10½ feet, the furnace was again blown in 1868, after having been idle for nearly nine years.

The operations of the present company have been very successful, continuing until in March, 1875, when the depressed condition of the iron market decided the owners to await more favorable prices and an increase of demand. The yield of the furnace has varied between 12 and 15 tons daily, of a very superior quality of hot blast pig.

Coal house, store building, forty laborers' houses, etc., are in fair condition. The lands, amounting to 7260 acres, mainly located in Greenup county (small portions extending over into Lewis county), abound with valuable timber, three-fifths of the tract being covered with the original growth; the remainder is fast growing up in good second, the coalings of 1853-4 now being nearly ready for use.

The following are the leading ore veins on the estate.

Sand block vein	20 inches
Little block vein	5 inches
Red block vein	6 inches
Big block vein	9 inches
Limestone vein	9 to 15 inches

whose practical average yield runs from 33 to 25 per cent. metallic iron.

A stratum of superior limestone rock is upon the grounds, as well as a layer of white sandstone rock, clear grit, which has been tested and proved a very superior article for flint glass purposes. The latter is in abundance, running from 10 to 20 feet in thickness.

A 16 inch coal vein, suitable for fuel and smithing purposes, exists throughout the ground, and a recent discovery, very near the furnace stack, makes the existence of the famous Jackson coal vein all through the estate very probable.

The adjoining lands also abound in timber and ore, which their owners readily dispose of to the furnace whenever wanted.

Thomas Bottomley, of Lee, Mass., went to Japan two years ago to superintend the building of a paper mill. He has just sent home an account of the opening of the mill, which is situated at Oji, and cost $200,000. It is furnished with a 72-inch Fourdrinier machine, produces a ton and a half of fine paper a day, and is the fourth mill in that country.

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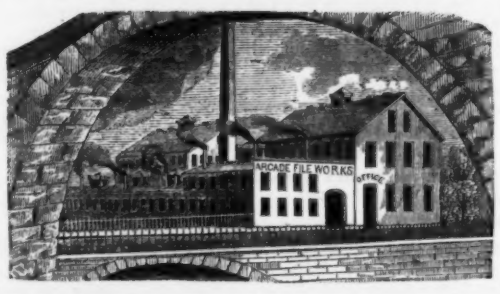

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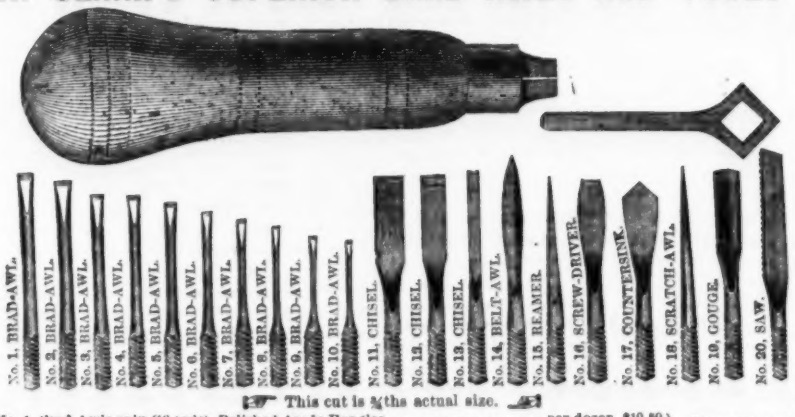

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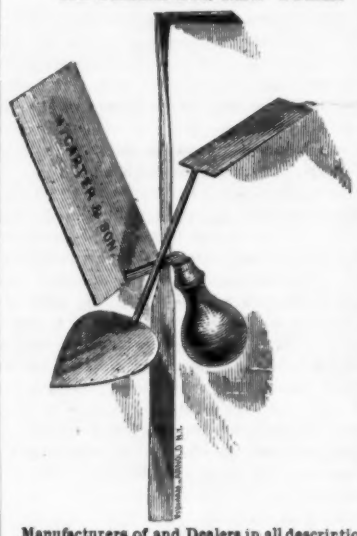

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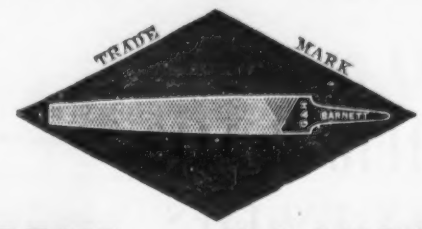

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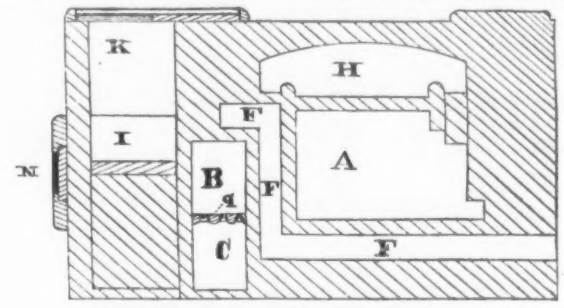
New Patents.

We take from the records of the Patent Office of Washington the following specifications of certain patents, lately issued, which will be found interesting:

IMPROVEMENT IN METALLURGICAL FURNACES.

Specification forming part of Letters Patent No. 171,321, dated December 21, 1875, issued to Elliot Savage, of West Meriden, Connecticut.

The objects of this invention are, first, to prevent the oxidation of the metal in the smelting chamber when brought to a high temperature by supplying said chamber with the reducing gases at the requisite degree of heat to smelt the metal without producing complete combustion in the chamber; and, second, to prevent the waste of fuel by supplying the reducing gases after leaving the smelting chamber with a fresh supply of oxygen to produce complete combustion, and utilize the heat thus produced to heat the reducing gases to the proper temperature before entering the smelting chamber.



IMPROVED METALLURGICAL FURNACE.—*Fig.* 1.

It is well known that in the ordinary process of combustion oxygen and carbon can be made to combine in two definite proportions, forming carbonic oxide (CO) or carbonic acid (CO_2); carbonic oxide being formed when carbon is burned in a limited supply of oxygen; carbonic acid being the result of the perfect combustion of carbon; carbonic oxide containing one atom of carbon and one atom of oxygen; carbonic acid being composed of one atom of carbon and two atoms of oxygen. When one pound of carbon is combined in the process of combustion with one and one-third pound of oxygen the total amount of heat developed is four thousand four hundred British thermal units,

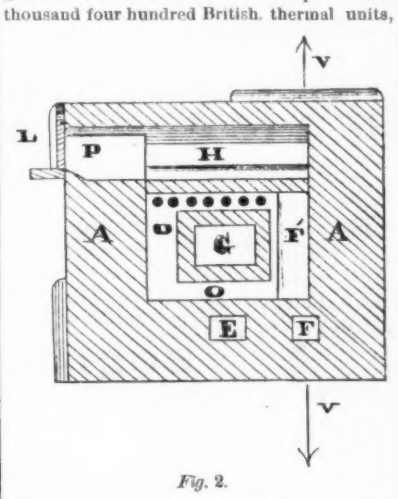


Fig. 2.

the product being two and two-thirds pounds of carbonic oxide, which can be combined by combustion with one and one-third pound of oxygen, and by so doing develop heat amounting to ten thousand and one hundred thermal units. When one pound of carbon is combined in the same manner with two and two-thirds pounds of oxygen, the amount of heat developed is fourteen thousand and five hundred thermal units, and the product of combustion is three and two-thirds pounds of carbonic acid (CO_2). The burning of carbon as it takes place in the combustion chambers of ordinary furnaces is always complete at first, provided the layer of coal from which the carbon is obtained is not so thick and the supply of air so small but that oxygen in sufficient quantity can get direct access to all the solid carbon—that is to say, one pound of carbon combines with two and two-thirds pounds of oxygen, and makes, as stated above, three and two-thirds pounds of carbonic acid, and thus carbon, which is solid immediately before the combustion, passes during the combustion into the gaseous state, forming with the oxygen carbonic acid gas, and producing fourteen thousand and five hundred thermal units per pound of carbon consumed, and under these conditions the process terminates; but when part of the solid carbon in the furnace is not supplied directly with oxygen, being first heated and then dissolved into the gaseous state by the hot carbonic acid gas, which has already been formed in it, the product is carbonic oxide gas, three and two-thirds pounds of carbonic acid gas being capable of dissolving one pound of carbon, and thus making four and two-thirds pounds of carbonic oxide gas. The volatilizing of this second pound of carbon causes a loss of heat amounting to five thousand and seven hundred thermal units, which, being taken from the fourteen thousand and five hundred thermal units produced by the perfect combustion of one pound of carbon, there remain eight thousand and eight hundred thermal units. Should the process stop here the waste of fuel is very great; but if the four and two thirds pounds of carbonic oxide gas is mixed with a sufficient quantity of fresh air of proper temperature it will burn with a blue flame, and the product will be seven and one-third pounds of carbonic acid gas, the amount of heat developed in the process amounting to twenty thousand and two hundred thermal units. Adding to this the eight thousand and eight hundred thermal units above, we have twenty-nine thousand thermal units as the result of the perfect combustion of two pounds of carbon.

It is well known to metallurgists that carbonic oxide in its action upon metals and metallic oxides is a reducing gas, and that metals are not readily oxidized, even when exposed to it at a high temperature. It is also known that when metals which have an affinity for oxygen are exposed to the action of carbonic acid gas at a high temperature they are rapidly oxidized, and thus burned up and wasted.

In the furnaces in common use for manufacturing wrought iron, the atmosphere of the heating chamber is usually kept in such a state as to prevent the oxidation of the iron while it is being heated. This is accomplished by supplying the combustion chamber of the furnace with a large amount of carbon, which, of necessity, must be burned in a limited supply of air, which results in a large waste of fuel.

The method of preventing this waste will be understood by the following description of improved metallurgical furnace.

In the drawing, Fig. 1 is a central vertical section of the furnace. Fig. 3 is a vertical cross section through line *x x*, Fig. 1, and Fig. 3 is a longitudinal vertical section through *v v*, Fig. 2.

A is the walls or mason work. B is the first combustion chamber; C, the ash-pit; D, the uptake. E is a flue through which air is conducted to the ash-pit. F is the flue, and F' its walls for conducting air to the second combustion chamber O. G is the flue in which the reducing gases are heated, and through which they are conducted to the smelting chamber H. I is the inclined dead plate of the fuel chamber, down which the fuel passes to the first combustion chamber B. J is a support for the wall of flue G. K is the fuel-chamber or coal box. L is the door of the smelting chamber; P, the entrance to the same; N, the door or stoking hole of the combustion chamber B. O is the second combustion chamber (completely surrounding flue G), in which the gases, after leaving the smelting chamber H, and taking a fresh supply of oxygen through perforations leading from flue F, are completely consumed.

The mode of operation is as follows: Fire being kindled in first combustion chamber B, and box K being filled with coal, air is forced through flue E into ash pit C, and up through grate bars *q'*. Complete combustion is produced immediately above the grate bars. The result of this complete combustion (CO_2), passing up through the incandescent fuel receives from the fuel being coked on dead plate I another portion of carbon, forming carbonic oxide, this reducing gas passing through flue G into smelting chamber H, and from there into chamber O, receiving, after leaving chamber H, a fresh supply of air through the perforations leading from flue F, the perfect combustion of the fuel is accomplished. The heat thus generated by this second combustion is communicated to the walls of chamber O and the flue G, the gases then passing out into the air through the up-take D. When a sufficiently high temperature has been attained for the purpose desired, the combustion can be retarded by regulating the supply of air through the air passages E and F, and thus a great saving of fuel accomplished, and a strictly reducing gas introduced into and maintained in the smelting chamber, while the oxidizing flame is confined entirely to the chamber O.

For the purpose of completely preventing any air entering the chamber H, the passage from said chamber is made smaller than the entering passage to it, thus causing and maintaining an upward pressure in the chamber H.

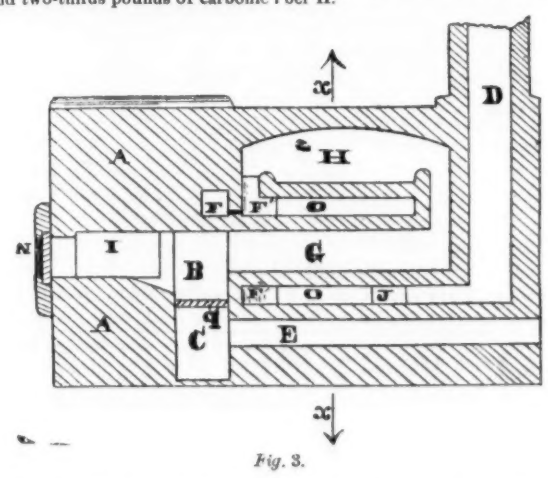


Fig. 3.

Claim.—1. The combination, substantially as hereinbefore set forth, of the flue for conducting the heated gases from the combustion chamber to the smelting chamber, and the second combustion chamber for heating said flue.

2. The combination, substantially as hereinbefore set forth, of the flue for conducting the heated gases from the first combustion chamber, the second combustion chamber for heating said flue, and the smelting chamber intervening said flue and second combustion chamber.

3. The combination, substantially as herein before set forth, of the flue for conducting the heated gases from the first combustion chamber into the smelting chamber, and the second combustion chamber for heating said flue with a flue for admitting air into said second combustion chamber.

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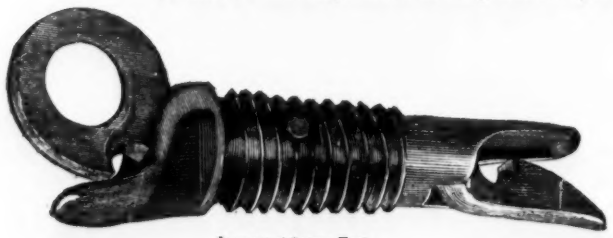

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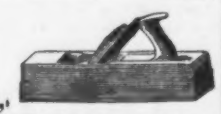

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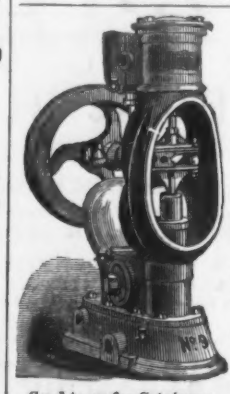

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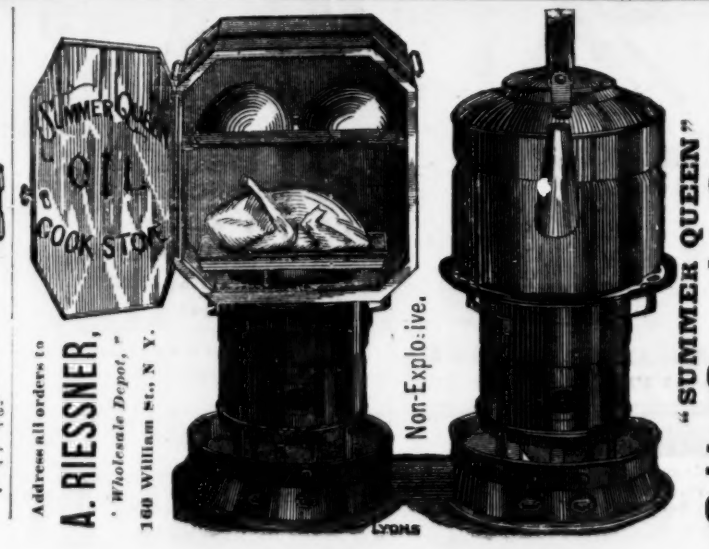

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Holbrook Patent Blind Hinge.

The cuts which we present herewith represent a blind hinge which does away with the necessity of opening the windows to open or close a blind, an improvement of very great importance. Fig. 1 shows the blind shut with the hinges and gear. In this figure I is the stile of the blind and H the casing. G shows the upper hinge. The butt attached to the blind has a tenon pending from the arm, on which is a lug that passes through a slot in the corresponding eyelet in the arm of the opposite butt,

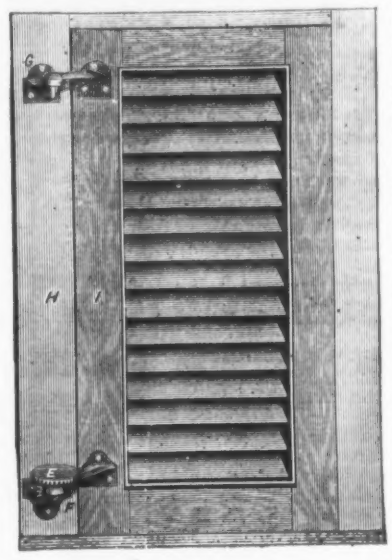

Fig. 1.

so that the blind can be shipped and unshipped only at this point. E is the crown wheel with cogs underneath meshing into the cogs of the pinion-head, also in sight.

Fig. 2 represents the pinion, shaft, rosette and crank, with joint motion, as they are when the blind is fastened. Their method of operation can be seen from an inspection of the cuts,

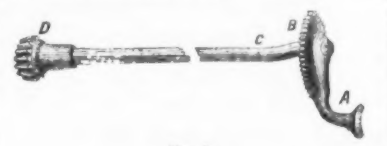

Fig. 2.

which show all parts of the hinges and gear. These hinges can be as easily adjusted to blinds already on as to new ones. They are finished in four styles. Simple Japanning, Bronze and Japan, Japan and nickel plate, and all nickel plate. The Holbrook Patent Blind Hinge Co., Watertown, N. Y., are the manufacturers.

PHILADELPHIA CORRESPONDENCE.

Office of *The Iron Age*, 220 South Fourth st.,
PHILADELPHIA, March 7, 1876.

The public mind here, as elsewhere, has been greatly exercised the past few days by the revelations at Washington. The conviction is general that it is but an illustration of a too prevalent condition of office holding. Official position has come to be a reward for doubtful political service, and as such services carry with them no guarantee of character, but rather convey an implication of defective morals, it easily comes to pass that offices of every grade are filled with men who do not hesitate to use their position for purposes of personal enrichment. The *Bulletin* says: "The dishonesty of officials amounts to a ruinous indirect tax upon the trade of the country. If it is an exaction of a secretary of war upon a 'post trader,' then the officers of the army, having their expenses doubled in order to compensate the trader for the secretary's levy, have to demand increased pay, and hence the protests of this none too well paid class, against proposed reductions in the army pay roll. If it is the demand of a customs official for blood money from a merchant, who, for some innocent violation of incomprehensible revenue laws, is threatened with damaging exposure and heavy mulcts and penalties, then the importer has to reckon these exactions among the risks of his business, and seeks compensation out of the buyers of his goods. If it is an assessor, who for a consideration consents to undervalue the property of a large real estate holder, then the revenue is so far deficient, and the taxes upon others have to be correspondingly increased. If it be a district attorney, who corruptly connives at the wrongs of officials or the fraud of others against the government, the result is the same. If it be the head of a department, who concerts with politicians, to commit the government to large needless expenditures, merely for the purpose of creating contracts, then the tax levy has to be increased; and it is no exaggeration to say that in this way alone hundreds of millions have been wrung out of the people within the last ten years."

The same system prevails in our local government. City officials gather around them a "ring" of politicans to control the city government and to extort from contractors and others a "divvy" in all city expenditures. They create parks, widen and pave streets, build grand public offices—all for the main purpose of making money. All these things come primarily from the indifference that has led us to passively assent to party behests, instead of resenting them with the firmness of Anglo-Saxon resistance to wrong. This is what has come of winking at iniquity in public office. This is what it costs to stifle the protest of conscience against political wrongs. Our industries are prostrate, our trade is without profit, our merchants are driven into bankruptcy, our working people impoverished, and these results spring from the quiet endurance, on the part of the people, of political corruption. We are are asked if there is no remedy to suggest for this deplorable condition of things. The *Evening Post* well says: "Our public affairs have reached a pitch of demoralization at which the safety of the future depends upon some grand popular *coup d'etat*, that shall rid it effectively of its destroyers. By a vigorous stroke of its strong limbs it must cast off the incubi who have so long ridden it, as the old man of the sea rode upon Sinbad the Sailor. Honest men, everywhere, who know what we now need, is integrity in office, the restoration of our finances, the dimunition of debt, the equal adjustment of the burdens of taxes, and a practical legislation which shall shape itself by the broad interests of the country, and not by the petty exigencies of candidates and cliques, should send their representatives to a national council to proclaim their determination. The people are nearly ready, if not altogether ripe for it, and it would require only a few brave men to raise the banner to rouse them to a tremendous rally."

The coal trade continues without any change of feature, suspension of work, stagnation and universal dullness prevailing in all its departments. At a meeting of the Schuylkill County Coal Exchange, held during the week, it was determined to continue the present suspension until the third of April, on condition that the operators in the other anthracite regions decide to suspend, of which there is no doubt. A new constitution and by-laws was adopted, the most important changes being the following: At the stated meeting preceding the 20th of each month, returns shall be made showing the shipments of each interest for the preceding month, together with the excess or deficiency of each, and each interest which is in excess of its fixed shipment quota shall pay a fine of $1·50 for each ton of excess. The total of these fines shall be divided at the rate of $1·50 per ton among those who have fallen short of the amount due to them in that month. Committees were appointed to wait upon all operators who were not in the old exchange, and induce them to join the new combination. The committees called upon a large number of operators, and in nearly every instance they were successful. The bituminous interest is making active preparations for trade in the spring, and if what we hear be one-half realized, it will push the anthracite business pretty hard. The Cumberland interest will obtain the reduction they have been endeavoring to secure by Legislature. This will enable them to put their coal into the market at most favorable rates. The Clearfield is actively moving for trade, and will no doubt double the last year's output; but the producers complain that with present tolls the profits are very small. It is reported that the New York coal companies have decided to begin mining operations on the 20th of March. As the third of April is named in the Schuylkill region, a compromise will have to be made, and probably the 26th of March will be fixed upon. The details with regard to contracts and some other matters have not been fully arranged. The present prospects of the coal trade are anything but flattering. We understand that the transfer of the retail coal trade of the Reading Coal and Iron Company to private hands is mere nominal than real. The prices are still to be regulated by the company, and the coal will be virtually sold on commission, or rather for a fixed price per ton, for which commission the sellers guarantee to collect the sales, and, at their own cost, make the deliveries, the company delivering the coal at the yards. We have no doubt that the new arrangement is much better for the company than undertaking to manage the multifarious details of a large retail coal yard.

In the iron trade there are no signs of improvement; the demand is languid as ever, and prices very weak. There is no great pressure to sell, however, most of the needy men having realized, and what business is done is of a legitimate character, consisting of purchases for immediate necessities, and it is surprising how cautious buyers are, the present very low prices having no apparent effect in inducing larger operations. Inquiries have been made this week for some 50,000 tons steel rails for early delivery, but as the mills have contracts on hand to last until mid-summer, it is thought the parties will take iron rails rather than wait any length of time. With this exception there is really nothing of importance to note, and the long-looked for revival in trade seems as far off as ever.

Our export trade continues to grow more rapidly than ever, the past month showing an increase of one hundred and twenty per cent. as compared with the corresponding month of last year, and every indication seems to show that this ratio will be maintained. This, of itself, must eventually have an important influence upon business, and, doubtless, is to some extent one cause of the present abundance of money. Whatever may be the cause of the great and long-continued depression in trade, capital is abundant, and four to five per cent. is about the rate for call loans, and five to six per cent. for commercial paper.

The arrangement which brings bi-monthly pay days in large manufacturing establishments on Saturday is likely to be abandoned throughout New England, and Monday substituted in lieu thereof. The latest emphasis to this movement is in the police reports from Valley Falls, R. I. The Rhode Island Horse Shoe Company pay off on the second Saturday of each calender month, and on Sunday following this last event, it is estimated that nearly one hundred persons were either drunk or but a few steps from it. The local prints characterize the day as a sad one for moral or legal influences.

We are informed that Mr. Blair, of Pittsburgh, has made some valuable improvements in his direct process, which will very materially lessen the time of reduction, as well as make it available for the manufacture of a high grade of pig iron.

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Genuine Improved Patent

SCREW WRENCHES.

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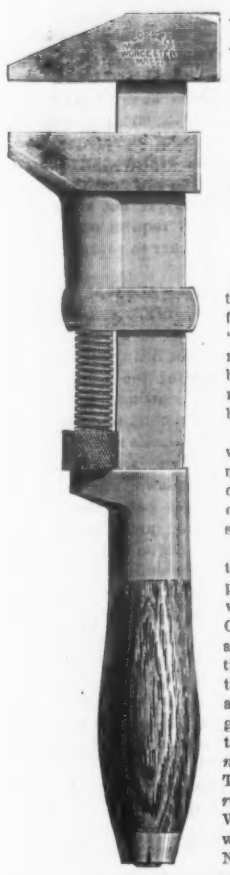

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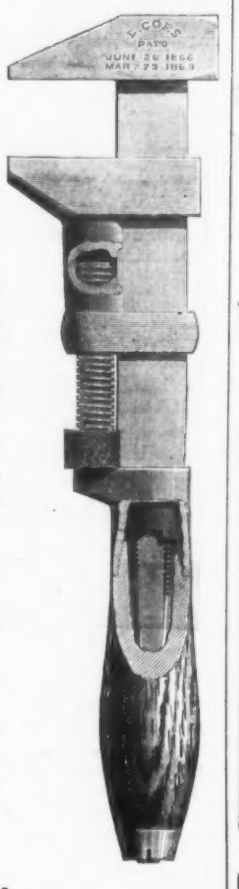

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These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

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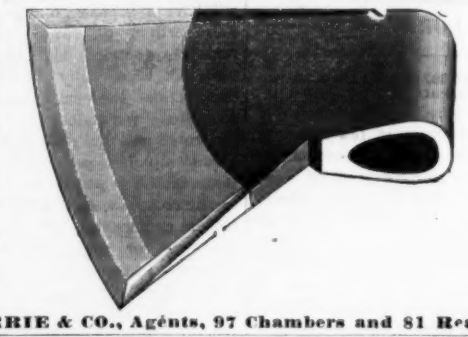

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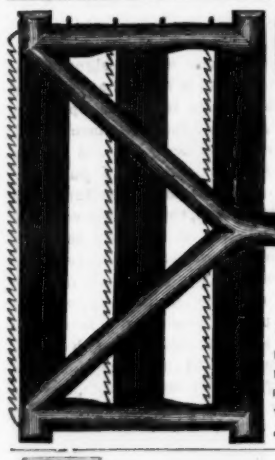

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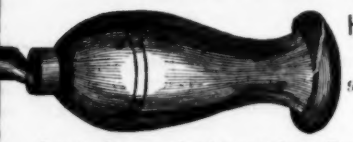
Northeast corner High & Friend Sts.,

COLUMBUS, O.



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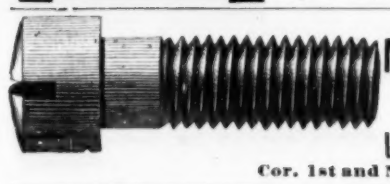
Our Combs are made with extra heavy Trowel Shanks, every Comb **WARRANTED.** They are not full jewelled, do not infringe upon the rights of any of those manufacturers of new fangled ideas, more beautiful in theory than in practice, but they are a common sense Curry Comb that every hostler in the country can use successfully, without undergoing a course of instruction as to the grasping device, &c., &c. These Combs are made both open and close back.



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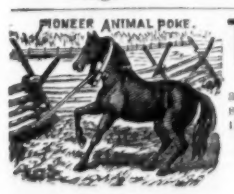

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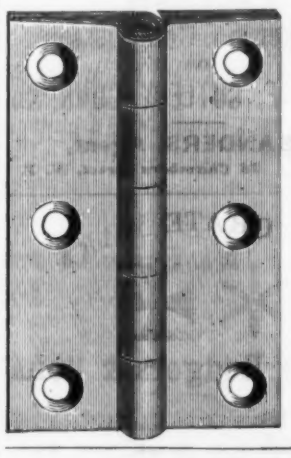

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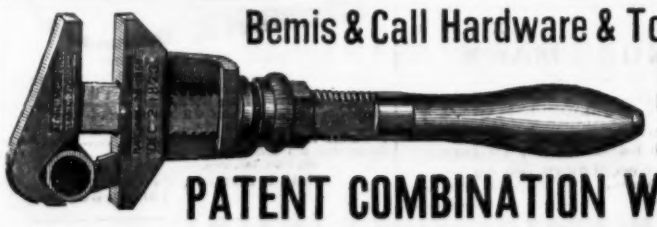

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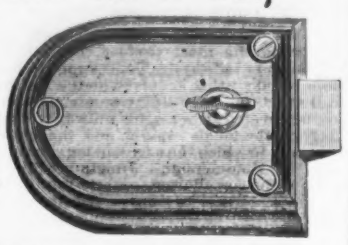

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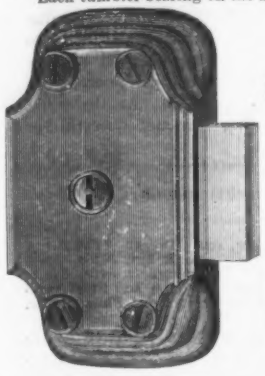

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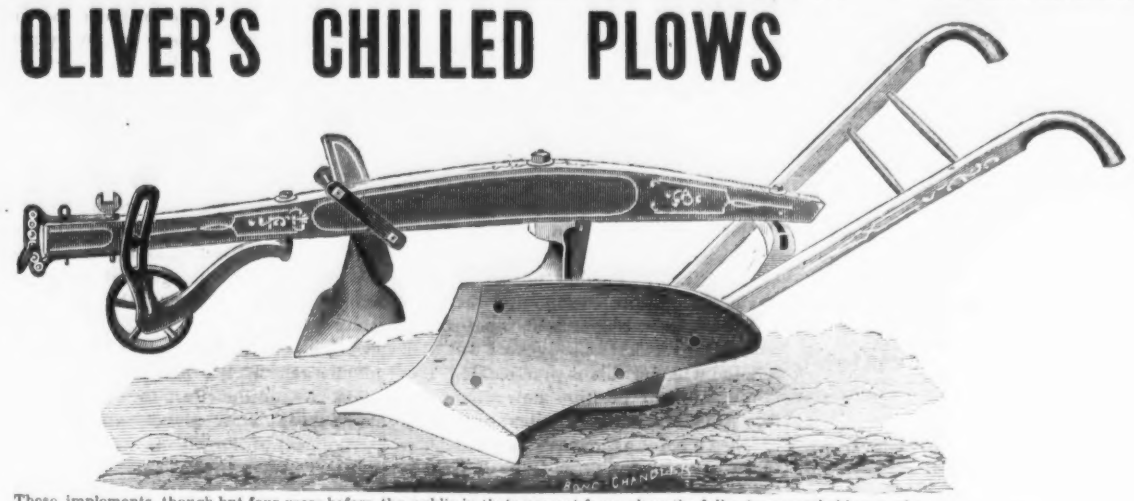

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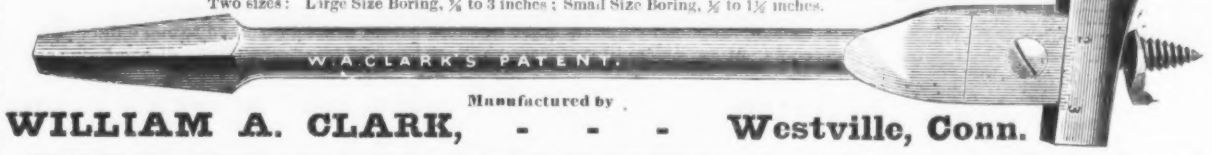

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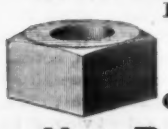
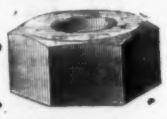


Roof,

and

Car Bolts.



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CONTENTS.

Manufactured Iron.

The announcement of the suspension of the long established and apparently successful firm of Zug & Co., Pittsburgh, with liabilities of upward of half a million, will occasion a shock of surprise in the iron trade. For thirty years the senior member of the firm has been in the rolling mill business, and the firm names of Lindsay, Zug & Co., Zug & Painter and Zug & Co. have been known for a generation. Their mill was, in some respects, especially in economy of labor in handling material, regarded as the model mill of Pittsburgh, and it has always been supposed that they could make iron as cheap as any other mill in that iron producing city. They have run largely on specialties, particularly agricultural iron, and yet, in spite of all this, the end has come.

We do not need a succession of such failures to show us that the time has come when the manufacturers of merchant iron in this country should cry, "Halt!" and see how severe their defeat has been, and whether there is any necessity of a further retreat. There is no doubt that they have met a severe reverse, more wide-spread and damaging than they at first supposed possible. Prices have been steadily falling until they no longer bear any relation to the cost of production; one manufacturer after another has gone into bankruptcy, until it is estimated that forty per cent. of the iron works of the country have failed; and for a majority of the makers of rolled iron, a further doing of business at a loss means inevitable financial ruin. Further retreat is cut off by the ubiquitous sheriff, and their only safety lies in making a bold stand for fair prices. Let us have a council of war to determine whether this is practicable.

What is their position now? Merchant iron has fallen and still fallen, until it has touched a point as low as was ever reached in the history of the iron trade of the country, and even at these low figures—in many cases far below the cost of production—buyers will only place orders for immediate demands. In times past, when iron fell to cost, merchants hastened to fill up their warehouses. They do not do it now. They are afraid that next week there will be a lower price and they will be caught with a full warehouse and the market still falling. We know a western dealer who thought when nails were at $2·90 that they could not go lower, and he placed a large order. Before they were in his warehouse he could buy at $2·80, a short time after at $2·70, and thinking himself safe, and to "hedge," he bought another large order. Now he proposes to wait to see what time will bring forth. What merchants want to know is two things: 1st. That the offer is as low as iron can be bought, and 2d, that bottom has been reached. It is a curious fact in the trade that those most anxious for an advance are not the manufacturers, but the merchants. Nothing would please the latter so much as to be obliged to pay 2·5c. for iron.

Then as to the consumption and production. In this retreat some have fallen out by the wayside, and to-day the actual production in not much, if any, in excess of consumption. However this may be, one thing is certain, that all the iron that is being rolled is sold for consumption, and not a keg of nails or a bar of iron less would be sold if nails were $3 and bars 2·5c.

All a buyer wants to know seems to be whether the price asked is the lowest at which he can buy. Once touch absolute bottom, and there will be no more trouble in getting a higher price, and it rests with the manufacturers to say whether this shall be so or not. We have an impression that if the council of war we have been advocating were held, it would be found that the force that has driven the iron trade to its present extremity has not been a pressure from without, but a panic from within.

Blue Spectacles.

This is a good season for the croakers, and they are certainly making the most of their opportunity. We meet them at every turn—in business, in society, at home and abroad: they come to see us and pour their melancholy plaint into our unwilling ears; they waylay us on the street corners, and thrust their gloomy predictions on us through the mails. Everybody seems to be looking about him through blue spectacles just now, and the universal cry is that "the country is going to the dogs," and, "those are best off who have nothing to lose." Manufacturers wring their hands and tell us they see no hope now or in the future; tradesmen tell us they would assign their present and prospecting profits to anyone who would guarantee them a modest living; political economists and financial theorists tell us that what we have passed through is not a circumstance to the disaster which awaits us—unless Congress will promptly carry out their ideas of financial legislation; capitalists tell us that everything is rotten, and that a man with a few dollars is scarcely safe in investing it anywhere; and the great army of those who are neither manufacturers, nor business men, nor intelligent theorists, nor capitalists, nor anything else in particular, take up the melancholy refrain, "Hard times and worse coming," and chant it in the minor key, until the very atmosphere is heavy with plaints of present misfortune and predictions of impending disaster.

In the midst of all this weeping and wailing, it is gratifying to reflect that a majority of men cannot see beyond the ends of their noses, even with the aid of the blue spectacles they derive so much sad satisfaction from wearing. It is the same old story; every summer is hotter than any any other summer ever was; every winter is more uncomfortable than any previous winter thought of being; every cotton crop is destroyed while it is growing; we are never going to have more than half an average yield of breadstuffs and fruits—until the crops are gathered; every year is a bad one for business—until the balance sheet is made up; every panic is worse in its immediate and permanent effects than any previous panic; and when times are hard, they are a great deal harder than ever before, and will continue so for ever. Yet, somehow, the summers and winters average very uniform; the crops are pretty generally good; times are seldom half as bad as people think, and panics are sandwiched in between periods of very comfortable general prosperity; one generation forgets the troubles of those which preceded it; and the world continues to revolve, notwithstanding the predictions of the prophets that it must soon give up the effort to preserve its individuality as a planet and make an assignment of its effects in favor of the sun. Twenty years hence a majority of Americans will have forgotten that we had a panic in 1873, and closed the first century of our natural history with a bad attack of the doleful dumps. Old men will talk about it, and writers on political economy and financiers will tell us, by way of illustration, how it came about; but it will have passed away from the memory of the people, and will be as little regretted then as the panic of 1857 is now.

We are not disposed to make light of the annoyances, anxieties, discomforts and suffering which those have experienced who have felt the pressure of the hard times. We well know that strong men have lost courage and strong houses succumbed; that thousands have suffered for food, and that labor is standing with idle hands in empty pockets—waiting, hoping, praying for better times. All that we have to quarrel with is the complaints of the croakers and wearers of blue spectacles, that better times are not coming. We have been through the same experiences—and even worse—more than once before, and will have to go through them again and again. Human wisdom has not yet discovered means of checking a too rapid national development, nor of placing wholesome restrictions upon over-trading, nor of averting the reactions which are sure to follow. We shall emerge from under the cloud just as soon as we are ready to move forward in the right direction. The trouble is just here: Business has got down to "hard pan" but the people of the country have not. When we have adjusted ourselves, our expectations and our energies to the conditions of cheap production, low prices and small profits; when economy in all departments of production has been carried to its ultimate application; when we are ready to live and accumulate wealth out of profits which four years ago we should scarcely have thought worth working for, we will find that we have no further use for our blue spectacles, and that the end of the world is not so near as we supposed.

English and American Railway Practice.

What we have said of the superiority of American over English cars, has lately found abundant confirmation in the performances of American cars on English railroads. Their superiority as regards strength to resist shock, and consequent greater protection to passengers, is now conceded in England, and the long needed change in the construction of English cars will, no doubt, be brought about by a further demand for cars of the American pattern. The following interesting paragraph, which we take from the Sheffield *Telegraph*, tells how some American cars on the Midland Railway did just what we predicted they would do in case of accident:

The collision on the Midland Railway, at Chiltern Green, on Wednesday morning, furnished conclusive proof—if proof, indeed, were needed—of the immense superiority of the Pullman car over the conventional railway carriage. The mail train, which was composed of Pullman cars, dashed into the goods wagons when it was going at the sensation speed of a mile a minute. The powerful express engine was thrown over completely on its broadside, along with two of the Pullman cars. Strange to say, however, the occupants of the cars, who were all asleep at the time, never felt the force of the collision beyond a mere shaking, and the only damage sustained by Mr. Pullman's magnificent vehicles can be repaired by a glazier. We are informed that several gentlemen who were traveling by this train have left their cards and their gratitude at the Pullman car office. We will not hazard a conjecture as to what casualty would have occurred if ordinary carriages had been subjected to such an ordeal. The matter may be added to the elder Disraeli's "History of events that might have happened."

Even allowing a liberal margin for shrinkage, the above statement is quite remarkable. We should think that the shock of stopping a train going at the "sensational speed of a mile a minute," if severe enough to turn the cars over, would have made itself manifest to the passengers by something more severe than a "mere shaking." The resistance offered by the English cars must have been very slight indeed. A few experiences of this kind will have a powerful influence in popularizing American cars among the English traveling public.

We also find confirmation of what we have said concerning the unreliability of English block signals, in an article in *Iron*. We quote as follows:

Another proof of the little reliability to be placed upon the most perfect theoretical arrangements in railway traffic, is supplied by the serious accident that occurred on the Metropolitan District line on Saturday evening last week. Like the Great Northern, this railway is worked strictly on the block system, and the Addison Road train, to which the accident happened, had passed the Hammersmith Junction before the one following was allowed to start. But the train in advance, owing to some mismanagement, combined with the dense fog and state of the rails, was allowed to slip back on the points, and was thus run into, the hinder carriage being crushed up, and the passengers in it, although no one was killed outright, fearfully shaken. Several of them were much cut about the face and other parts of the body and bled profusely, and, as in all such cases, many will have their health permanently injured and their lives shortened in consequence. Like the officials of other lines, those of the Metropolitan District endeavored to hush up the affair, maintaining the closest reticence with regard to the nature and extent of the casualty.

Inferior cars, insufficient brake power, overworking of servants, and too absolute a dependence upon imperfect systems of automatic electric signalling, are defects in English railway construction and management which the engineers of that country could easily correct by a closer study of American practice.

At the conference between the boilers and manufacturers, at Pittsburgh, last Monday evening, nothing was done; the meeting adjourned *sine die*, and the conferences are at an end. It is understood that the ultimatum of the manufacturers was $4·62½ per ton for boiling, without a scale, until Nov. 1, or a scale on the basis of $4·50 on a $2·50 card, guaranteeing the puddlers against a decline below $4·62½ before Nov. 1, and giving them the benefit of any advance beyond this. The boilers rejected this, and offered $4·75 until Nov. 1, without a card. This was rejected, and as the matter stands now there is no price, no agreement, no prospective meetings, and each mill can do as it pleases.

Mr. Wm. Richards, a well known iron manufacturer, of Warren, O., died on Sunday the 27th ult. Mr. Richards was born in Wales, but came to this country when quite a young man, and has long been identified with the iron industries of the Mahoning Valley, having built the Girard and Warren furnaces, and made successful for a number of years the Warren Rolling Mill. The panic of 1873 affected his business interests disastrously; for two years his works have been idle, and no doubt his financial troubles have hastened his death.

The Decline in Tin.

The depreciation in the value of tin has been surprisingly rapid since the commencement of the year. An examination of the production in 1875, on the one hand, and of the deliveries on the other, together with the present statistical position of tin, will materially assist us in explaining this extraordinary decline, which has depressed the metal to a figure even below the bottom price of last year.

In the United Kingdom production from native ores in 1875, instead of decreasing according to a previous careful estimate some 3000 tons, was diminished, according to the official figures since received, only 442 tons. There was an increase of output of Banca and Billiton, last year, of 719 tons over and above the yield of 1874. At the Straits settlements, the disturbance at Perak impeded production and the free outflow of tin during a couple of weeks at most. The output thus reached a figure not hitherto attained, resulting in an increase of 3423 tons. Australia, notwithstanding a prolonged drought, produced an excess over 1874 of 1412 tons. The shipments during the winter months were unusually heavy, favored, as they were, by the wool shipping season, which causes tin to be taken at a reduced freight for the sake of good stowage. The prospective supply is liberal both from the mainland and Tasmania. The amended figures of production are therefore as follows:

	1875. Tons.	1874. Tons.	1873. Tons.	1872. Tons.
United Kingdom	9,500	9,942	9,970	9,560
Banca and Billiton	7,925	7,206	7,385	6,149
Straits	11,000	7,577	6,963	9,785
Australia	7,218	5,800	2,990	150
Total	35,643	30,525	27,258	25,644

After deducting the transhipments to the United States, and adding the estimated quantity of Australian ore used, the deliveries in 1875, in England and Holland, were 18,499 tons, against 15,439 and 11,310 the previous two years. The world's consumption last year is put down by competent European statisticians at 32,500 tons, against 27,000 in 1874. There were consequently 4500 tons more consumed, as an offset against an increased output of 5118 tons.

At the close of the first month of the present year, the visible supply, as compared with the preceding two years, stood as follows:

STOCK OF TIN IN EUROPE.

	Jan. 31, 1876. Tons.	Jan. 31, 1875. Tons.	Jan. 31, 1874. Tons.
Banca on warrants	1,113	1,015	1,070
Banca Trading Company	1,658	3,243	3,300
Billiton	875	980	850
Straits and Australian at London	6,038	3,951	2,336
Total	9,684	9,191	7,556

AMOUNT OF TIN AFLOAT FOR EUROPE.

	Jan. 31, 1876. Tons.	Jan. 31, 1875. Tons.	Jan. 31, 1874. Tons.
Banca	431	70	320
Billiton	1,000	360	270
Straits	922	1,727	670
Australian	2,403	1,500	....
Total	4,756	3,657	1,260

It will be seen from what precedes that the visible supply stood 14,440 tons, against 12,848 and 8916 the previous two years, the excess being due chiefly to the large amounts afloat.

That under these circumstances the price of tin should have resumed a downward tendency, will cause no surprise. On the 1st of January, 1876, Straits stood at £81; a month later it had declined to £80, and has since dropped to the low figure of £73.

The deliveries in England and Holland in December were 1272 tons, against 1431 and 1254 in January, 1876 and 1875. They will have to be very liberal throughout the present year in order to prevent a further decline in tin, for unless something unexpected occurs, either in the Straits settlements or Australia, there seems to be every likelihood that production will continue to make further progress in those localities.

A further decline in Straits tin, say to £70, would probably compel the mines to curtail production until at least the present value was recovered. In Australia we do not believe the output would be shortened even by a similiar decline, the richness of the ore being greater there than elsewhere. As the metal is situated, the out-look is not cheerful for holders.

New Publications.

THE IRON WORKS OF THE UNITED STATES. A Directory of the Furnaces, Rolling Mills, Steel Works, Forges and Bloomaries in every State. Prepared by The American Iron and Steel Association, No. 265 South Fourth street, Philadelphia. Centennial Edition, 1876.

This little volume, of which we have before made mention in these columns, is a valuable work of reference for the use of all who are connected with the iron trade of the United States. It has been compiled with very great care by Mr. James M. Swank and his intelligent assistant, Mr. Geo. W. Cope.

The information contained in the work has all been obtained by direct personal application, and nothing has been appropriated from previous editions without careful verification. It is, without doubt, the most perfect and satisfactory directory of the iron trade ever compiled, and if any errors have slipped in they are not attributable to carelessness in compilation, or undue haste in the collection of information. Mr. Swank is a very thorough and pains-taking secretary, and we have often had occasion to congratulate the Association on retaining the services of an officer so eminently fitted for the discharge of the delicate and difficult duties of the position, and so devoted to the furtherance of the interests of the iron trade. We are informed that Mr. Swank is now preparing his report for the Centennial year, which will be a statistical work of great and permanent value. In no other country are the records of the production, importation and consumption of iron kept with the same thoroughness as in this country, and we hope the British Iron Trade Association will carry out their present intention of adopting Mr. Swank's system, and giving the world an annual statistical report covering all departments of the iron and steel trade.

HOW WESTERN FARMERS ARE BENEFITED BY PROTECTION. By David H. Mason. Compiled from Editorial Articles which have appeared in the *Inter-Ocean*, Chicago, during 1874 and 1875. Published by the author. Chicago, 1875.

We have in this pamphlet a number of practical arguments based upon exact figures, which will commend themselves to the intelligent consideration of a very large class of our population. Mr. Mason combats logically, and without any show of passion, the broad assumption of some writers that protection to domestic industry cannot but oppress the agricultural classes, and shows that the general results of our system of tariff legislation have been beneficial to the farmers—especially the Western farmers. The book will interest all into whose hands it may come, and will no doubt prove effective in giving the people of the West clearer and more comprehensive ideas on subjects embraced within the domain of economic science than they now have.

WOODEN AND BRICK BUILDINGS WITH DETAILS. A. J. Bicknell & Co., 27 Warren street, N. Y. 2 vols., 160 plates.

We can scarcely give a better idea of the scope and contents of these two volumes than to quote the title page in full. Wooden and brick buildings with details, published under the direction of A. J. Bicknell, containing 160 plates of plans, elevations, views, sections and details, villas, cottages, farm houses, country seats, street fronts for dwellings, store fronts, banks, atheneum, library, town hall, masonic hall, hotels, opera house, court house, school houses, ice houses, boat house, gateways and fences; including a double plate, showing a street view of twelve dwellings, and a variety of exterior and interior designs and details for plaster, wood, brick and stone fronts; also descriptive letter press, specification of New York form of contract, schedule of charges endorsed by the American Institute of Architects, etc., elevations, plans and details to scale. To say that this extensive plan had been carried out would be no small praise. This has not only been done, but it has been done in a satisfactory manner. There are, in all, 173 designs, contributed by 44 of the leading architects of the country. One of the most astonishing things is the completion of the details, of which, in most cases, a sufficient number are given to enable the workman to construct any of the buildings without difficulty. To the architect they form a portfolio of valuable designs, showing some of the best work in the country. We think that this work is of such interest and value that almost any person intending to build would do well to consult if not to purchase it. The designs are photo-lithographed, and the printing of these, as well as that of the letter press, is very good

indeed. The draughtsmen have, apparently, hit upon a style of drawing which is admirably rendered by the process. A whole article could be written upon the designs alone, but want of space compels us to be brief. We do suggest to those who wish to build that they cann t do better than to spend a few evenings in carefully studying this work. In an artistic point of view these designs are very valuable, and will do much toward developing good taste in building.

Meeting of the American Institute of Mining Engineers.

(Continued.)

THE CORNWALL IRON ORE BED.*

Dr. Hunt began his address by stating that the iron ores of the United States had been referred to two divisions. 1st. The Laurentian, to which were to be referred the ores of the Adirondacks, and the Huronian, in which are classified the ores of Northern Michigan and also probably those of the Iron Mountain of Missouri.

Beside these there is another group of ores to be discussed. The South Mountain, of Pennsylvania, was traced by the speaker from its origin in the Highlands to its termination, and the character of the rock described as real Laurentian gneiss.

It has hitherto been thought that in the Laurentian and Huronian could be included all the ores known, but the ores at Cornwall are so peculiar that they deserve examination and study to see if this theory be correct.

Their situation is this: Four or five miles south of Lebanon rises three ore hills, representing together an oval 400 feet long at each end and 800 feet at its greatest diameter. This oval is cut by ravines into the three hills mentioned, one the East Hill, the so-called Big Hill, 300 feet high, the Middle, 100 feet high, and the Grassy Hill, 70 or 80 feet. This is a mass of almost pure iron ore, magnetic, regularly stratified and almost horizontal. This mass of ore is walled about by ridges of eruptive doleritic rock or trap. The fact of this ridge being elliptical was dwelt upon, and also in connection with it reference was made to the fact that in the Connecticut Valley there is a decided tendency of the trap to take this same form.

The question arose, How came this peculiar deposit of ore there, and to what group of rocks are they to be referred? Prof. Rogers placed them among his primal slates and sandstones, others have referred them to the Triassic age. Dr. Hunt was inclined to accept the classification of Prof. Rogers.

A further interesting question was, How has this body of ore been preserved? I conceive that there must have been at some time a large deposit of ore that has been subject to erosion, and this has been preserved by its wall of trap.

It has been supposed by some that the character of the ore has been changed by the trap, but of this I find no evidence.

As to the extent of the deposit, borings have been made with the diamond drill in the Middle Hill to the depth of 300 feet; 200 feet below the water level and the bottom of the deposit was not reached. Remembering that the Big Hill is 300 feet high, we shall have a mass of iron at least 500 feet in vertical thickness in this hill.

The peculiar mineral and chemical character of the ore was referred to. It is comparatively soft, with little phosphorus, of a granular nature, associated with copper and a little cobalt. It seems well adapted for Bessemer metal, and at Harrisburg 25 per cent. is used.

The deposits at Dillsbury and its vicinity were described as belonging to the same geological horizon, and closely related in mineralogical associations. The ores of Wheatfield, and of several other localities in the vicinity of Reading, are similar, as likewise those of Boyerstown, further eastward. Here, at a depth of more than 300 feet, a bed of magnetic ore, nearly 200 feet in thickness, was traversed in a boring, and a shaft has recently been sunk for the purpose of working it.

The Jones Mine, on the south side of the red sandstone belt, which has so long been noted both for iron and copper, is another large deposit belonging to the same class.

These ores are distinct from those of the Laurentian, seen in the South Mountain, and also from those of the Huronian of Michigan, and belong to a new horizon whose importance to the metallurgy of Pennsylvania has only begun to be recognized.

DISCUSSION ON THE ABOVE.

Prof. Persifor Frazer, Jr.:

In my association with the last speaker, during his temporary visit to my district of York and Adams counties, in the Pennsylvania Geological Survey, last summer, I was accustomed to speak of the ores he alludes to, and to regard them, like most others, as due to the alteration of ferruginous minerals by the contact of dykes of trap. There was good excuse for the belief in the necessary connection of the ore and the trap, for, in the Dillsbury district, the former seldom or never occurs without the latter. Since last summer further explorations have revealed several facts bearing on the question of the horizon of these ores, none of which are inconsistent with the theory defended by Dr. Hunt, that these ores belong to the base of the Palæozoic and not to the Mesozoic formation. The South Mountain (south of the Susquehanna) reaches its maximum breadth on the Chambersburg turnpike, where it consists of a series of interlocking ridges between eight and nine miles in width. In the second of these valleys between these ridges, and lying among the soft Huronian schists, two miles or more from the margin of the new red sandstone, and perhaps hundreds of feet below the upper horizon of these schists, occurs a specular ore of very great beauty and apparently great purity, resembling in a remarkable manner the similar ores inside the "New Red." It is proper to state that the traps are always in contact with the ores of this district, and so far as examined they seem to be dolerite, melaphyn or syenite, generally the first. But there is nothing inconsistent with the view that these traps acted to protect and not to form the ore. In one bank, where the ore deposits were found on only one side of a dyke, my first view was that the dyke in its up-flow had forced up the slabs of sandstone and mud rock, and subsequently filled by percolation in the iron solutions and then altered by heat. Recent exploitation has discovered one, also, on the other side.

*Abstract of an address by Dr. T. Sterry Hunt before the American Institute of Mining Engineers at the Washington meeting, Feb., 1876.

Prof. B. Silliman, Jr:

In connection with this ore, found at Jones Mine, near Birdsboro, and which also exists in other localities, there are some very interesting facts. This ore is a complex hydrated silicate of alumina, iron and copper. It is well-known that Messrs. Hunt and Douglass have perfected a process for extracting copper from ores low in the metal, as low as from 3 to 10 per cent., with a loss of only one-half of one per cent. of all the copper contained.

There are two classes of ores to which this is applicable. 1st. Hard ores; 2d. Soft ores. The first class are treated with crushing and roasting as an ore of this class. The total average amount of copper in these ores is 3 to 4 per cent., ranging from 2 to 5. This is too much copper to go into a blast furnace, and not enough to go into a copper furnace. Hence this is an admirable case for the Hunt and Douglass process. If the refuse could be used it would be valuable. The wet fix afforded an opportunity for its use. The sand resulting could be used for this purpose, as it contained 60 to 70 per cent. of iron, free from sulphur, and, practically, free from phosphorus.

The soft ores, when examined *in situ*, were found to be a rock of imperfect stratification that has decayed. It showed on analysis to have 25 per cent. of water and 8 per cent. of water of hydration. Some of it contained as high as 12 per cent. of copper, but it run about 5 per cent.

The question was how to use this ore. In continuation of this subject, Prof. Silliman described a new muffle furnace.

ON A MUFFLE FOR CALCINING CERTAIN COPPER ORES.

Remarks by Prof. B. Silliman:

The ore in question, the Jones mine, near Birdsboro, Pa., which exists also in other localities, is a complex hydrated silicate of magnesia, aluminia, iron and copper, presenting a problem which has hitherto baffled all efforts for its successful treatment with a view to extract its copper. Experiments conducted by Messrs. Hunt and Douglas, on a scale of some magnitude, proved last year that when this ore was heated with carbon, out of contact with air, the copper is rendered quite soluble in a solution of ferrous chloride and common salt. The furnace described is a double muffle—heated by one fire and contained in one arch, the heat passages being so arranged that a perfect uniformity of temperature in all parts is attained. These muffles are built of the most refractory fire brick, very carefully laid and stayed to avoid distention. They are calculated to contain about 7 to 8 tons each of dry ore mixed with 5·10 per cent. of coal dust. The muffles are charged from above by two man holes. The dimensions of each chamber are 12 feet high, 10 feet deep and 2 feet wide. They are discharged by draw doors on a level with the floor of the muffle. The time required to heat a charge in these muffles is about 40 to 48 hours, depending on the degree of dryness of the ore. To obtain the ores in a suitably dry condition, the waste heat of the furnace, as it escapes from the muffles, is carried through an extensive series of flues covered by tiles, on which the ores, as they come from the mine, are spread and turned, and when nearly dry are mixed with the coal dust. The consumption of fuel is about 1 ton in 24 hours. Bituminous coal is used, and the flame is made to ascend on the outside of each muffle and descend over the arches and between the muffles on its way to the drying floors. This system completely reduces the copper in the ore to the metallic state, which, as it is drawn hot from the furnaces, becomes oxidized to the condition of cuprous and cupric oxides, which are almost completely exhausted by the Hunt and Douglass bath of ferrous chloride, the loss not exceeding one-third of 1 per cent. from the ore averaging about 5 per cent. of copper.

This paper was illustrated by carefully prepared drawings, which are required to render its details intelligible, and these will be reproduced in the transactions of the Institute.

Dr. Sterry Hunt described these great beds of a greenish earthy material, which are found at the Jones iron mine, in Berlin county, Pa., underlying the magnetic deposits so long worked in that region. These strata, apparently modified by decomposition, consist in large part of a hydrous silicate of magnesia, iron, alumina and copper, which is related to chlorite in its character and composition, and, when in a pure state, contains no less than fourteen per cent. of copper. As extracted from the mine, the impure earth contains from four to five per cent. of copper, constituting an ore of this metal, which is now successfully treated by the process of Messrs. Hunt and Douglass, at Phœnixville, Pa., by means of the furnace described at this meeting by Prof. Silliman.

REFRACTORY MATERIALS.

Abstract of a paper read by Prof. T. Egleston

These materials are usually clays, which are silicates of alumina, and a few natural rocks. Rocks can rarely be used, as they are never homogenous, and are liable to crack; clays cannot be used as they are found, but must be mixed with other substances. They are refractory, in proportion to the alumina they contain, and less useful, as they are acid; two to three per cent. of iron is sufficient to make a brick fusible at high temperature. Silica alone is exceedingly infusible, but has no binding power. The Dinas brick, which is silica, is formed by one and a half per cent. of lime, and will resist a clear white heat alone, but is worthless if it comes in contact with metallic oxides; two per cent. of oxide of iron would make such a brick useless in a Siemens-Martin furnace. A silica brick expands to such an extent that the rods of a furnace have to be loosened while it is being heated, and tightened when the furnace cools. Alumina is also very infusible, but it contracts at a high heat, and has therefore to be mixed with silica, or burned clay, to prevent this contraction, as any depressions or contractions would make eddies in the flame and rapidly destroy the furnace. Bauxite, a hydrated compound of alumina and iron, which sometimes contains a little silica, and sometimes none at all, is also used. Siemens makes a brick of this substance which contains three to five per cent. of silica only, which is five times as infusible as the best Stourbridge brick. We have the anomaly of six per cent. of oxide of iron, making one material as fusible as ordinary brick, and another, containing over 20 per cent. of the same material, being infusible. Lime and magnesia are also very refractory; they are both used to make crucibles for the fusion of platinum, but lime can only be had as a carbonate, which, under heat, becomes caustic, and when the heat is allowed to go down, it slacks and falls to powder, so that it can only be used as in Styria, in very small continuous furnaces. As lime is very friable, the campaigns are never long. Magnesia is also a very refractory material, but difficult to get. Beside the effect which the chemical composition has upon the refractoriness of materials, there is an effect due to molecular condition which has been but little studied and is still less understood.

What is demanded to day by our present metallurgical practice is a better material than we now have. Mr. Holley has shown that the cost of refractory materials for a ton of Bessemer ingots is $1. For the Siemens-Martin process this expense is $5, while in Wales it is only $1. This shows the necessity of a careful discussion of the whole subject, which should be made by making mixtures which should theoretically be fusible, and then submitting them to the temperatures they should sustain, and then making a careful chemical analysis and also a mechanical and microscopical examination.

Mr. A. L. Holley, at a subsequent meeting of the Institute, in connection with this subject, presented the drawings of the details of a Pernot furnace, where it is necessary to hold up the roof, which is very drooping. This is proposed to be accomplished by the use of a lathing of water pipes, that is, letting the pipes hold up the fire-brick roof, instead of the brick supporting itself. The roof is intended to be monolithic.

Business in Wheeling.

A correspondent sends us the following concerning the iron industries of Wheeling. In the manufacture of iron and nails, here and in this vicinity, a large amount of capital is in constant use, a statement of which might be of interest to many. The amount of this is shown in the following table:

Riverside Iron Works	$1,000,000
Benwood "	600,000
Belmont "	500,000
Belaire "	500,000
La Belle "	500,000
Wheeling Iron Nail Works	500,000
Wheeling Hinge Co.	150,000
Foundry and machine shop	100,000
Ætna Iron and Nail Co. (Bridgeport)	350,000

The large amount of capital thus employed furnishes work for a great number of men. Beside this the mills own and operate their own coal banks, which are all in close proximity to the mills, thereby enabling them to place it on the ground at a small cost, which is a decided advantage over those who have to haul it long distances.

No changes of any consequence occurred in the management of any of our mills here, all the old officers being re-elected, with the single exception of the Wheeling Hinge Co., Mr. Robinson being superseded by Mr. A. W. Campbell. Mr. Campbell is one of the original corporators and one of the proprietors of the *Daily Intelligencer*, of this city, and largely identified with the iron business in Wheeling.

Nail men say that they are having a fair inquiry for nails, but most orders are scanned closely, the matter of credit being made as short as possible.

One or two concerns in this section, without capital or brains, have done much to depress the price of nails. Being compelled to realize on them at any price, or pay their hands in 90 day scrip, it is only a question of time when such concerns will go to the wall—the sooner the better for all honest competitors.

The mills are all running full, with a fair prospect of being able to dispose of their product, if not at a profit at least at a price that will not show much of a loss.

Determination of Manganese in Spiegeleisen.

The following note, by Mr. Wm. Galbraith, will be read with interest:

As is well known to those who frequently have occasion to determine the amount of manganese in spiegeleisen, the usual methods are tedious and require great care on the part of the analyst. If sodium acetate is used to separate the iron, the oxide of manganese retains a considerable quantity of soda, which is extremely difficult to get rid of; and, on the other hand, if ammonium acetate is used, the precipitation of the manganese is very slow or it requires a large excess of bromine.

Although the above methods have been in use for a long time, no attempt seems to have been made to get a more expeditious one, or at all events none have been successful until Mr. Parry showed that a definite oxide of manganese could be got which enabled him to determine the manganese very accurately and expeditiously. His method is simply to dissolve a weighed quantity of the spiegeleisen in nitric acid (sp. gr. 1·20) in a small pear shaped flask, evaporate to dryness, and heat pretty strongly over a Bunsen burner or spirit lamp for about ten minutes. He then treats the contents of the flask exactly as a manganese ore, heating with sodium oxalate and hydrochloric acid, and measuring the resulting carbonic acid.

The apparatus he uses (which was devised for the purpose) is, he states, a modification of Schiebler's, but as a matter of fact has many advantages over that apparatus, excellent as it is. One very decided advantage is that it admits of heating the solution, and altogether it would be very valuable in a laboratory, where the accurate estimation of carbonates or the measurement of gases are frequently required.

As every one, however, has not got the apparatus, I thought it would be advisable to show that the manganese could be determined some other way.

If it is admitted that Mn_2O_3 can be easily formed, a number of methods immediately suggest themselves as being likely to give the amount of manganese, prominent among which is the well known method of treating with hydrochloric acid, and passing the resulting chlorine through a solution of iodide of potassium, the liberated iodine being titrated with sodium hyposulphite (*Fresenius*, fifth edition, p. 135). Accordingly, I tried that method, but although I took every care, and returned to it again and again, I completely failed to obtain accurate or even constant results. This seems strange (I may say that Mr. Parry had previously tried and failed also), and at first I attributed my failure to the fact that I was not getting Mn_2O_3, but was afterward convinced that it is much easier to get that oxide than at first sight it appears. I can scarcely avoid coming to the conclusion that there is something wrong with this method of determining free chlorine.

The next method I tried proved in every way successful. I proceed exactly as Mr. Parry does (and find no difficulty in getting Mn_2O_3). One grm. of the spiegeleisen is dissolved in nitric acid (sp. gr. 1·20) in a small round bottomed flask, and evaporated to dryness. When dry, the flame, which may be either a spirit lamp or a Bunsen burner, is turned so that the bottom of the flask is cherry red for ten minutes. It is then allowed to cool very gradually.

At this point, instead of forming carbonic acid, I simply put into the flask a weighed quantity of ammonio-ferrous sulphate or ferrous sulphate of a known strength, and then heat with rather dilute hydrochloric acid. The contents of the flask very soon dissolve, but it is well to keep shaking the solution while it is being heated, to prevent loss of chlorine. It only remains now to determine the iron left unoxidized, in order to arrive at the quantity of manganese, which can be done, of course, with potassium bichromate solution. If it is feared that the ferrous solution may get oxidized by exposure to air, a small piece of marble put into the flask, which can also be fitted with a cork and tube, will readily prevent that.

In four successive experiments I obtained the following results:

No.	Fe Oxidized.	Equal to Manganese p. c.	By Parry's Method.
1	0·2018	19·82	20·16
2	0·2103	20·65	20·85
3	0·2396	23·53	23·75
4	0·2435	23·88	——

No. 2 gave, by the acetate of ammonium method, 20·55 per cent., which was done with great care. No. 4 is a repetition of No. 3.

It is evident, of course, that there is nothing original or new in the above method, but it contrasts very favorably with the usual methods of separating the iron with sodium or ammonium acetate, and precipitating the manganese from the filtrate with bromine. It is not at all troublesome, does not take long, and has the advantage that the only chemicals and apparatus required are those which are necessary for the assay of iron ores.

Some New English Stoves.

English inventive talent, when applied to the improvement of stoves and heating apparatus, sometimes develops in extraordinary directions. At the last meeting of the Social Science Congress there were exhibited some inventions in the stove line which would astonish our American housekeepers. From a description of these exhibits published in *The Engineer* we quote as follows:

Constantine's "Treasure" range was represented by several sizes and varieties. It requires no brick setting, and burns coal, coke, cinders, breeze and kitchen refuse. The fire-place is of cast iron, but, instead of an open ash pit, a tight fitting plate with a valve in it, worked by a handle, forms the front of a drawer into which fall all the ashes and earthy residue. By means of this valve any degree of heat may be obtained. The boilers are constructed of annealed iron, coated with porcelain enamel.

The "People's Stove," invented by Mrs. A. Lewis, in appearance resembles a table, standing about the same hight, and consists of a wide, but not high, heat chamber, heated by a small cylindrical or rectangular fire box, with open bars, placed below it. The whole is mounted on four legs, and is so far portable that it requires only a wrought iron flue tube, turned into the chimney, to carry off the smoke. The top forms a hot plate, and in the several openings are inserted the cooking utensils. This stove is not only cheap in itself, but also economical in working, as it burns only a very small quantity of coal, coke, or compressed peat, while it thoroughly warms a moderate sized room.

In Mr. Thomas Waller's "fire contracting" stove, to supersede loose cheeks, backs, &c., for reducing the size of a grate, he makes the cheeks movable on centers at the back of the grate by the mere insertion of the poker in a notch cast in them. He also provides fire brick bottoms, and admits the external air at an angle of 45° on to the top of the fire, thus consuming two thirds of the smoke. A saving of from 40 to 50 per cent. in fuel is claimed on account of all these improvements.

Mr. W. Barton sent his improved Milner grates, with backs of fire clay for economizing heat and projecting it as much as possible into the room; and also his "circular front" cooking range, the fire box of which can be altered in size, and is provided with an ash grating to save the cinders.

Messrs. Brown and Green exhibited their "Gem" portable cooking stoves and kitchen ranges, and also their patent ventilating stoves, which are lined with fire-brick. They have a ventilator in the ash-hole door to regulate the combustion, and another near the top of the stove for the admission of a current of air, which passes over the fire into the flue, preventing any accumulation of gases and assisting to ventilate the room.

Mr. G. B. Sharpe sent his patent fire grate for preventing dust in a room. This is provided with a tin cover, which is put over it when I fled off the hooks from which it is suspended, when it may be carried out of the room to be cleaned and relaid.

Messrs. C. & J. Reed, engineers, Brighton, exhibited the Wharncliffe grate, which combines a warm air gill stove with an open fireplace. Instead of standing in a recess, this grate projects into the room; it consists of a cast iron fire box provided at the back and sides with gills, which increase the heating surface for warming the air in the chamber formed by an ornamental canopy. The cold air enters in any quantity that may be desired through interstices in the plinths and returns heated to the apartment through a perforation in the top of the canopy. The back is constructed of a form to facilitate the consumption of smoke; but for the small quantity that remains unconsumed an outlet is provided at the back by a nozzle, which is the only part that requires to be fixed, the rest being self-contained and merely standing against the wall.

Mr. G. Shrewsbury, among other stoves, sent his "Eclipse" gas range, which has an open fire, made by jets playing upon lumps of asbestos. The open fire, beside performing a variety of culinary operations, is made to heat the greater portion of a hot plate, which, however, is provided with a separate burner to make the whole of the top into a hot boiling surface. This maker claims that he can prevent the disagreeable smell usually noticed in gas stoves. Messrs. Sydney Leoni & Co. had a good show of their well known "Treasure" gas stoves and copper fronted cheerful fire-sides; and Messrs. Billing & Co. exhibited their gas stoves for heating and cooking. Mr. B. Looker sent specimens of his warming and ventilating gas stove, which is entirely composed of fire clay, and so arranged that the air becomes heated without coming in contact with the gas.

Warming and cooking by petroleum was represented by Messrs. Dietz & Co. with their "Paragon" heating stoves and "Climax" and "Perfect" cooking stoves, and also by Messrs. Wright & Butler with their cooking and heating stoves. Most of the petroleum and gas stoves were exhibited in action, a privilege not conceded to those heated by coal, on account of difficulties as to the insurance of the building.

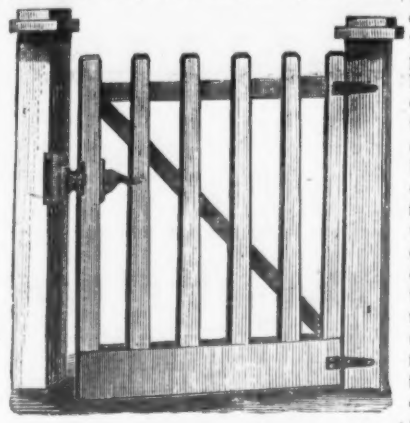
We venture the opinion that one could buy, at any American stove store, a cheap second-class stove, which would do more work at less expense of time, fuel and trouble than any one of this extraordinary line of English "novelties." Set up in one of our manufacturer's ware rooms, this would look like Falstaff's recruits called up for inspection.

The Supreme Court of Iowa has recently rendered a decision on the following points of telegraph law, which will interest those who have frequent occasion to use the wires: 1. When a telegraph company is charged with sending a market report incorrectly, it will be presumed, in the absence of any evidence upon the subject, that the reports were correctly received by the company. 2. When such a company undertakes, without restriction upon its liability, to transmit such reports, the burden rests upon it to show that a mistake in the transmission occurred for reasons which would relieve it of liability. 3. When such company contracts to send market reports to be obtained by its agents, it undertakes to procure and send correct reports. 4. Where a telegraph company, under a contract to furnish market reports, advised a party that wheat was worth $1·12½, whereupon such party advised the purchase of 5600 bushels, and his agent paid therefor $1·50, which was the actual price, the court allowed damages at the rate of 28½ cents per bushel. 5. A telegraph company, contracting to furnish Chicago market reports to a wheat buyer in Iowa, is liable for damages resulting from the purchase of wheat by the dealer in Chicago, without notice that it was his intention to make such purchase.

The following is a rust cement for water and steam pipes: Make a stiff paste with 2 parts sal-ammoniac, 35 parts iron borings, 1 part sulphur and water, and drive it into the joint with a chisel; or, to 2 parts of sal-ammoniac and 1 part flowers of sulphur, add 60 parts of iron chips, and mix the whole with water to which one-sixth part vinegar or a little sulphuric acid is added. Another cement is made by mixing 100 parts of bright iron filings or fine chips or borings with 1 part powdered sal-ammoniac, and moistening with urine; when thus prepared, force it into the joint. It will prove serviceable under the action of fire. All the above parts are by weight.

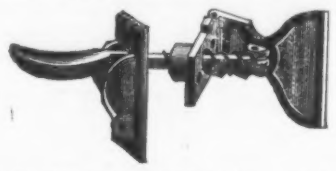
Pitkin's Excelsior Self-Adjusting Gate Latch.

It is the only self-adjusting gate latch made, which we have any knowledge of, at once adapting itself to all positions of the gate, which can shrink from two to three inches, and the latch will open wider and still fasten. The frost or other causes may heave the gate up six inches



or more, or the gate can lag six or more inches, and still catch as firmly as when in its original place. It never requires any readjustment, as it always adapts itself at once to all positions.

It is strong, heavy and easily hung; will outwear other latches; is guaranteed against breaking or getting out of order, and is suita-



ble for large and small gates alike. Cattle cannot open it.

J. Clark Wilson & Co., No. 81 Beekman street, are sole agents for these goods, which they offer to the trade at $3 per dozen.

Railways and the Iron Trade.

The Philadelphia *North American* says: The frequent expressions in England of gloom and despondency over the condition of the British iron trade invariably include some reference to our own country as the leading cause of it, by its vast progress in iron industries, its protective tariff, and the cessation of its railway building movement. But the London *Times* affords us proof that even yet the whole truth is not known in England. For that journal remarks that our producing capacity is nearly up to our requirements, whereas the fact is that our capacity is not only equal to but beyond our requirements. The *Times* seems to include in its measurement of us a permanent importation of foreign iron, and it is the continuance of this importation long after the extreme dulness of the market was as well known abroad as here, that has caused heavy losses both in England and America. In the effort to permanently disable our own industries by these continued shipments, the foreign dealers have inflicted enormous injury upon their own.

After the American crash of 1873 the English interests for a time kept up the show of prosperity by investments to an immense extent in railways in Europe, India, Australia, Africa, Canada and America, with the corresponding control of the supplies of railway iron. But in none of these cases have the investments been fortunate or profitable. Disaster has overtaken them all, and it is their accumulation that now stares the English iron interests in the face, while they are seeking to hold us solely responsible for their trouble. Bearing this in mind, the reader will be prepared to appreciate the reference of the *Times* to the reduction of our requirements by our inability to procure capital for any important extension of our railway system. As most of the demand for British railway iron was forced into the countries referred to by English investments of capital in railway securities, and these investments have been no more fortunate anywhere than here, we see already the indications of the return of the tide in the negotiation of several very large railway loans in England.

Whether we have enough or too many railroads does not seem to matter much, since in any event we seem to be fated to have a great many more. The question is whether the benefit shall inure to English or American capitalists, to English or American rolling mills. As our own production is steadily diminishing in the aggregate, while our possible productive capacity increases, it is not difficult to see that our neglect may again give the foreign interest the leading hand in the railway movement. In the two years of stagnation and discredit with which our railway system has been visited the foreign bond holders have secured their own interests by foreclosures and other arrangements, and now stand ready with a vast accumulation of idle capital, awaiting a favorable chance to open upon us again.

We cannot resist the conclusion that this opportunity is now close at hand, and that we are about to witness a new activity during the present centennial year. English trade is so dismal in its condition that an effort of some kind will be found necessary, and in no quarter of the world has English capital ever reaped such a rich harvest as in America. Our products have become so vast and valuable, and the average dividends of our railways are so regularly above those of England herself, that no English capitalist who looks at the magnitude of the Republic can be made to believe that we want no more railroads. And indeed it is, after all, a grave question for an American to decide. For though in the west the railways are in excess the results are prodigious, we may say unparalleled. The proof exists that with an adequate supply of railroads America can produce any required amount of whatever may be deficient in Europe.

If all parts of the country are to be as well supplied with railroads as the West, then the amount of work yet to be done far exceeds all that has been done. The railways to India do not pay, and it is doubtful if those in Russia ever will. But America is the paradise of railways, and sooner or later all lines are sure to pay. Here then is what is always before the English iron master, and the American merchant may judge for himself how much chance there is for an English iron dealer to give up such a market while there remains a ray of hope of holding on to it. As for the supply of capital, that is the bait with which the British iron trade fishes. Doubtless we can employ advantageously all the money we can borrow, even if it were ten times as much as our present foreign debt. But in the progress we have thus far made most of the capital has been domestic, and the foreign capital has played the minor part. As our iron trade persists in clinging only to the home market, and makes little if any effort to build up an export trade, it becomes important for those who undertake the management of it to consider whether, beside neglecting the foreign markets, they propose to wait until English capital takes the lead in starting the American railway movement again. We are confident that such will be the case if the present season goes past without some domestic movement. The croaking that has been going on for the past two years about our railway system has been carried to a far greater excess than the railroads ever were, and has been in striking contrast with the actual fact that in the aggregate our railroads have paid better dividends than the aggregate English railways. Indeed, the business has stood the great revulsion remarkably well, and justifies all the investment in it, and would justify as much more. If we can take the lead now in the coming railway movement our own capitalists and iron interests will receive the benefit of it, and if we do not the profits will go to the foreigners. We do not stand in any need of foreign capital, but foreign capital stands in very great need of our investments. And the usual result is an increase of foreign debt.

Effect of Magnetism Upon Iron and Steel Structures.

BY CHARLES M. CRESSON, M.D.

Bars and structures of iron and steel, when allowed to remain at rest a considerable time, acquire measurable magnetic polarity. Moderate percussion, alternations of heat and cold, exposure to the rays of the sun, especially with a long axis of figure parallel, or nearly coincident with a magnetic meridian of the earth, have a tendency to develop and strengthen magnetic polarity. Thus, iron bridges, iron vessels upon the stocks in progress of construction, and iron railway tracks are particularly liable to acquire magnetic polarity. It is asserted that the relative position of the long axis of iron ships with reference to the magnetic meridian materially affects their polarity and the facility of the correction of their compasses. If the keels of such vessels be laid on a north and south line, they are supposed to acquire greater polarity, and to retain it more steadily than when laid east and west. The evidence of an iron ship's polarity is exhibited to the greatest degree, by comparison of its effects upon its compasses when the vessel is sailing in an easterly or westerly direction.

A consideration of the following facts seems to favor the conclusion that magnetic bars of iron should be better able to resist tensile strain than those which are not magnetic.

A thoroughly magnetic bar is one of which each end repels a pole of a magnetic needle. The center of such a bar is neutral; that is, attracts either end of a magnetic needle and repels neither. If we break such a bar in half, we are possessed of two magnetic bars; that end of the orginal bar which attracted the south end of a magnetic needle continues to attract it, that which attracted the north end continues to do so, whilst the two new ends which had formed the neutral center of the original bar, each acquires a polarity opposite to the other, and also opposite to that possessed by its own opposite end. A continuance of this process, that is, the fracturing of each half until we have obtained such minute fragments of the bar as can be examined only under the microscope, still produces perfectly polarized bars, possessing all of the magnetic characteristics of the original bar, with varying attracting and repelling force, according to some ratio of the relative length and thickness of the fragments.

Arguing upon this we are led to the conclusion that a continuance of this process must produce molecular magnets. If we place magnetic bars in contact with each other, the north and south poles alternating and in contact with each other, we obtain a metallic chain of considerable strength, although its component parts are not mechanically connected together. The closer the contact of the ends of the bars the stronger will be the chain. If with isolated bars we can obtain a connecting force equal to many pounds by close contact, how much stronger must be the connecting force when exerted between molecule and molecule.

Such an argument, undoubtedly, leads to the conclusion that bars saturated with magnetic force should certainly be stronger than those that are not.

Faraday announced that "there existed lines of force within the magnet of the same nature as those without. What is more, they are exactly equal in amount with those without. They have a relation in direction to those without; in fact, are continuations of them, absolutely unchanged in their nature."

To determine the effect of magnetic force upon the tensile strength of iron and steel,* bars of each were selected and cut into suitable lengths for use in the breaking machine and numbered. Nos. 1, 3, 5, &c., were broken in the usual manner. Nos. 2, 4, 6, &c., whilst in the breaking machine were surrounded by a suitable coil of copper wire, through which a current of galvanic electricity was passed during the operation of breaking.

The results obtained from the magnetic steel bars were about 1 per cent. less than those obtained from the non-magnetic, and from the magntic soft iron bars about 3 per cent. less than from the non-magnetic. Both the steel and iron bars became heated whilst within the influence of the current of electricity, the soft iron more so than the steel. It occurred to me that the depreciation of strength might have been caused by the rise of temperature† in the bars, and I accordingly prepared permanent magnets from alternate sections of a steel bar and repeated the experiments, comparing the cold magnets with the unmagnetized sections of the same bar. The results showed no appreciable difference in strength between the magnetic and non-magnetic sections.

To test the matter still further, bars of steel were so magnetized as to present a pole at one end, the other in the middle of the bar, with one end neutral—that is, one end of the bar attracted the north or south pole by a magnetic needle and repelled the south or north, and the other end of the bar attracted either pole of a magnetic needle. Under these conditions, if there was any effect to be had from the influence of the magnetic force, the bar should incline to break, either at the central pole or at the neutral point between the poles.

The results of the experiments showed that there was no inclination to a choice of either location as the place of fracture. The conclusion arrived at is that the condition of magnetic polarity does not in any way influence the strength of steel bars. With reference to the soft iron bars the comparison was not made, for the reason that they would not remain magnetic unless surrounded by the galvanic coil, in which case they became heated by the action of the current.

How far a change from fibrous to crystalline structure is affected by the influence of magnetism has not been ascertained, or whether there is any deterioration of the strength of iron or steel on such account.

Iron telegraph wires in the course of time become brittle, and to such an extent that if the usual method of uniting them by winding each upon the other is attempted they are frequently broken in the process. From this it would appear that a passage of a strong galvanic current produces some molecular change affecting the strength of iron. Such conducting wires, however, are not necessarily, or even usually, magnetic. There can be no doubt, however, as to the deteriorating effect of *galvanic* force as an acceleration of oxidation or the solution of a metal.

Observations upon iron bridges and structures subjected to atmospheric influences, and upon boilers exposed to the action of heat and the chemical agents contained in ordinary waters, lead to the conclusion that galvanic force is usually as great, and frequently a far greater, cause of deterioration than mechanical wear. Indeed, all of the operations of nature, organic and inorganic, both constructive and disjunctive, involve the production of more or less galvanic force or are the results of its action.

Motion, unaccompanied by any other apparent change than that of place, is a disturber of electric or galvanic equilibrium, and the converse is equally true. If it were possible to produce perfectly pure and homogeneous iron, then the generation of destructive galvanic currents by the contact of sheets or bars would not take place.

By exercising care in the selection of iron, especially that used for steam boilers, the deterioration from galvanic action can be reduced to a minimum. Many steam boilers have come under my observation in which the corrosion was but slight, and affected all parts equally; others, in which the metal of a single sheet only was attacked, the corrosion of which sheet protected the remainder of the boiler almost as efficiently as if the sheet had been replaced by one of the metal zinc.

The most striking instance of the effect of introducing a sheet of metal of greatly differing electro-condition, that occurs to me, is that of a boiler which had been in use for a considerable length of time without showing any unusual tendency to corrosion, when from some cause it became necessary to replace a sheet by a new one. The result of the introduction of a new sheet was to set up at once a strong galvanic action, by which every sheet in the boiler was corroded except the new one. Samples of iron cut from the edges of the old and from the new sheets were placed in a bath to which a few drops of dilute acid were added, and a connection made with a galvanometer, resulting in the production of a new current; the purer iron corroding, and protecting that which contained the greatest amount of carbon. The inciting cause of the galvanic action was therefore judged to be the introduction of a sheet of iron electro-negative to those already in the boiler, its position in the electro chemical scale depending upon the amount of carbon it contained.

The injurious effect consequent upon the junction of masses of wrought iron of varying electro-chemical property is, therefore, increased when *steel* is joined to wrought iron, as is frequently the case in locomotive boilers in the tubes and tube sheets. Again, by the junction of *cast iron* to steel or to wrought iron the destructive effect is greatly intensified, and at times becomes quite as violent as when copper is made an element in the galvanic circuit in connection with wrought iron.

The necessity for the selection of iron with reference to its electric condition, applies equally to the material employed for bridges, or vessels or boilers, or any structure which is to be built up from separate sheets and bars of iron. It is, or ought to be, the habit of careful constructors to cut sample pieces from every sheet of bar or metal worked, and to make a trial of their quality by bending hot and cold, and to make frequent tests of tensile strength. Examinations as to electro-chemical condition can be made with equal facility. Determinations of the composition of the metal or of the percentage of carbon in it by chemical analysis are unnecessary; an ordinary workman, furnished with a coarse galvanometer and a weak acid bath, can ascertain the exact electro-condition of each sheet or bar more rapidly than he can examine the quality by the ordinary tests of bending on an anvil, hot and cold. With the metal of bridges, vessels, and especially steam boilers, the deterioration by corrosion is more to be feared than is mechanical wear.

Galvanic corrosion acts with greater vigor in locations that are usually inaccessible, such as the interior of joints or defective sheets or parts that are closely approximated, and the mischief is only suspected when it has progressed to such a degree as to become evidently dangerous, and the parts are in condition to require immediate attention and repair.

Attention to the precautions enumerated for securing mechanical and chemical fitness of the metal to be used for structures of iron, will undoubtedly promote economy and safety.

On the foregoing paper, Mr. Robert Briggs, editor of the *Journal of the Franklin Institute*, has made the following remarks: The first portion of the foregoing paper carries with it, in negative results, an antidote to the evil of promulgating an occult reason for strength or weakness of iron. Some of its statements are a little questionable; for instance, it may be doubted if a bar or structure of iron, pure and simple, acquires magnetic polarity, or rather, retains it under any circumstances. It is generally known that all the iron of commerce, or in use for structural purposes, is steely to some degree, and the extent of the nature of steel in the material is in some ratio a limit to its capability to assume permanent magnetism.

The effect of the position of a vessel with regard to the points of the compass, when in construction, has been thoroughly investigated and determined; the value of that effect, however, is so influenced by the dissimilarity of the plates or bars in proportions of carbon, and by differences in the application of force upon them, by hammering or in other ways, as to be very indefinite.

The reasoning that a magnetic bar should be stronger than one not magnetized, on a theory of internal subdivision, is somewhat wanting in logical force. It is difficult to comprehend how the attraction should multiply, except on the argument that two halves of a string are stronger than a whole one. If the law were good, the subdivision need go no farther than Joule's celebrated magnets, where a fragment of iron of one-half grain weight supported by attraction a quarter of a pound (or 3500 times its own weight). This proportion would add nearly 56 lbs. for each sixteenth of an inch in length of bar of one square inch section—11,000 lbs. per foot of length.

It is very certain that telegraph wires are not impaired in the least by the electric currents of service. Telegraph wire is hard drawn or rolled, and galvanized by a coating of zinc, and when laid at rest, without excessive tension, will last some unknown length of time. When strained from poles placed at great distances apart, contracted by the winter cold to the tension of a harp string, when the gentle zephyrs from the northwest have played on them for many months, when occasional loads of ice of eight or ten times their own weight have tested them—then the wire may be found to have become so brittle that it cannot be wound around its own diameter of 5-16 of an inch, with impunity.

But this part of the paper terminates very satisfactorily. Magnetism did not strengthen iron. It is the second portion, not so conclusively disposed of, that leaves behind a possible assumption of dangerous character. It is a serious mistake to admit as a popular utterance, that we must look to "galvanic (voltaic?) force" as the cause of deterioration of boilers, or of iron structures of any kind. It is very certain, that an electric current produced by a voltaic battery will decompose a solution of a salt, and cause a crystal to be formed at one pole, and a gas to be eliminated at the other. It is also certain, that two dissimilar metals, in a bath of acid, which from chemical affinity will attack either, will act by the destruction of the one for which the acid has the greatest affinity and a voltaic battery will be formed from which electrical currents can be taken. It may be admitted, that no deposition in crystalline form occurs without the agency or accompaniment of a current of electricity, and that no decomposition of metals by rusting is unattended by the development of a current. But the acid that destroys, and the salt that deposits, are precedent to, or coincident with the voltaic currents.

It is questionable, if at any temperature below the highest used in steam boilers, either iron or steel (iron with a small quantity of carbon in intimate but not chemical combination) will rust in pure water divested from oxygen. The acids requisite for the slow destruction of the boilers are supplied by the presence of oxygen. The presence of oxygen by absorption in all water, and its evolution by heating of the water, beside the vegetable acids generally to be found in small quantities, the decomposition of chloride of sodium, to some degree, when salt water is used; and the fat acids derived from tallow and oil, when condensed water from the exhaust of an engine is pumped back; all these supply acid requisite for the slow destruction of a boiler. The carbonate and sulphate of lime, which form the bases of incrustations are to be found in most waters, and in great abundance in some.

A perfectly homogeneous condition in the electro-chemical state of all the material of the boiler might be a protection from rusting of any part, and prevent the establishment of electric currents and preclude incrustation, but the equilibrium would be excessively unstable; the difference of temperature would obviously disturb it, and the supposition, with our knowledge of the constituents of iron, either in the crude product or the finished material, is simply impossible. The effect of differences of heat on the electro-chemical condition of a piece of iron is quite equal to that proceeding from the presence or absence of small quantities of carbon. While the balance of evidence is that without free (possibly ozonized) oxygen in water, iron of any grade (not spongy) will not decompose it at ordinary temperature; yet pure iron is acted upon with the greatest facility.

Pure iron, also, is nearly incapable of being worked in the furnace without burning up—as iron approaches purity it becomes workable without excessive waste only in Siemens furnaces, where the gases of combustion are free from oxygen—and pure iron has very little comparative tenacity and great ductility. Iron, on the other hand, with an almost imperceptible proportion of carbon (and possibly some other substances as substitutes), is tenacious, unyielding to near the point of rupture and suitable for boiler plates. With another small addition to the carbon, the iron becomes low steel, or so-called homogeneous iron, of yet greater strength and suitability. With other ratios of carbon there is found steel not suited for boiler work by hardness, although the strength may be further increased. Imagine it to be feasible "for an ordinary workman with a coarse galvanometer and a weak acid bath," to select these qualities, the operation would be highly satisfactory if iron boiler plates were found in these four conditions solely. But there are other kinds of plates.

The exact place of the plates in their electro-chemical state does not detect the small increment of phosphorus or sulphur, and the iron may still be worthless. The remedy is simple: "Cut sample pieces for every sheet, 'bend them hot and cold,' and make 'frequent tests of the tensile strength.'" Follow all these precautions and we shall have a great many professors and very few workmen, and our mechanics will go to less critical countries.

We shall, without doubt, have acquired a degree of excellence not yet attained, and until other precautions are suggested, such as the disuse of piled plates, because some have blisters, the use of drilled holes, because some punchings are imperfectly done and strain the sheet, &c., boiler making will have taken a step toward perfection.

In short, the improvement of boiler practice must move in the track already laid. Responsibility must urge upon the user of a boiler the necessity of excellence, and emulation must do the rest. The iron manufacturer will emulate to supply iron better suited, the workmen boilers better made, and the engineer boilers better planned. The scientific man can help them all, but he cannot make philosophers of them.

The question now really open to consideration is either how to obtain water free from injurious substances, or else to allow such substances to act upon some material, zinc for instance, for the protection of the iron. When this is settled, the destructive "galvanic (voltaic?) force" will be found to have disappeared.

The Apotheosis of the Locomotive.

The following is the latest contribution of Walt Whitman to English literature. Those who see in his writings the scintillations of Homeric genius will find much to please them in these lines "to a locomotive in winter:"

Thee for my recitative!
Thee in the driving storm, even as now—the snow—the winter day declining;
Thee in thy panoply, thy measured dual throbbing, and thy beat convulsive;
Thy black cylindric body, golden brass and silvery steel;
Thy ponderous side bars, parallel and connecting rods, gyrating, shuttling at thy sides;
Thy metrical, now swelling pant and roar—now tapering in the distance;
Thy great protruding head-light, fix'd in front;
Thy long, pale, floating vapor pennants, tinged with delicate purple;
Thy dense and murky clouds out-belching from thy smoke stack;
Thy knitted frame—the springs and valves—the tremulous twinkle of thy wheels;
Thy train of cars behind, obedient, merrily following,
Through gale or calm, now swift, now slack, yet steadily careering;
Type of the modern! emblem of motion and power! pulse of the continent!
For once, come, serve the Muse, and merge in verse, even as here I see thee,
With storm and buffeting gusts of wind and falling snow;
By day, thy warning, ringing bell to sound its notes,
By night, thy silent signal lamps to swing.

Fierce throated beauty!
Roll through by chant, with all thy lawless music! thy swinging lamps at night!
Thy piercing, madly whistled laughter! thy echoes, rousing all!
Law of thyself complete, thine own track firmly holding;
(No sweetness debonnair of tearful harp or glib piano thine).
Thy trills of shrieks by rocks and hills return'd,
Launched o'er the prairies wide—across the lakes,
To the free skies, unpent, and glad, and strong.

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*The steel employed in the experiment was "Jessop's Round Machinery," one-half inch rod, and broke at maximum, 127,934 lbs.; minimum, 125,694 lbs., per square inch of section. The iron broke at maximum, 59,948 lbs.; minimum, 56,887 lbs., per square inch of section.

†For effects of temperature upon the tensile strength of iron, see Report of the Committee of the Franklin Institute, of Pennsylvania, "Upon the strength of materials employed in the construction of steam boilers." Experiments made at the request of the Treasury Department of the United States (Jan. 4th, 1881; Jan. 5th, 1837.

BUSINESS ITEMS.

NEW HAMPSHIRE.

The New England Mining Co., at Lisbon, has completed a mill for reducing gold from sulphuret ores, and has begun work.

MASSACHUSETTS.

J. T. Croft, iron works, Boston, is reported to have failed.

F. A. & A. M. Small, machinery, Boston, are reported to have failed.

The liabilities of J. H. Roberts, machinery, Boston, are $48,000. An offer of 23 cents on the dollar is made.

The Florence Sewing Machine Co. made 5500 sewing machines and 40,000 pairs of skates in 1875.

The Sheffield foundries, at Florence, which have been closed for some time, will probably soon be started again, as outside parties are expected to take the matter in hand.

The Parker's Mills Nail Co.'s Works, at Wareham, which have been doing a large business, have shut down. They have 75 nail machines.

The American Watch Co., Waltham, have reduced wages 10 per cent.

The scythe works and farm of Henry S. Mansfield, Millville, have been sold at auction. Both were purchased by Augustus F. Lamb, of Providence. The scythe works were sold subject to a mortgage of $17,900, and were bid off at $11,500, or $6400 less than the mortgage. The farm sold for $6548, or $1000 above a mortgage on it.

The wire works of J. R. & J. E. Prouty, two miles north of Spencer village, have been sold to the Washburn & Moen Manufacturing Company, of Worcester, possession to be given April 1. It is understood that the business will be carried on by a joint stock company, of which Richard Sugden will own a controlling interest.

CONNECTICUT.

The Hartford Nickel Refining Company have commenced operations in that city. The company are the proprietors of an improved process of extracting nickel from the ore and refining it, producing a superior article of plates for nickel platers' use, as well as the grain nickel used for German silver and other alloys.

NEW YORK.

The puddle mill at Rome has shut down for a short time for repairs.

At Buffalo all the mills are at work; 8 inch and 10 inch and universal mill, nail, plate and bar mill, and both nail factories. The horse nail factory is stopped. The malleable iron works is running all the time.

Morrison, Colwell & Page mill, at Cohoes, started up last week.

NEW JERSEY.

There is dug annually in Middlesex county clay to the value of $1,000,000, which is used for fire brick, pottery, etc.

Prof. J. C. Smock has been steadily at work since last July in making the collection of minerals for the Centennial. Specimens have been collected from nearly 400 localities, over 100 of which are iron mines.

PENNSYLVANIA.

They have been swearing to the value of furnace property in Lancaster county. The St. Charles was valued at $50,000. Eight acres of land and the Donegal Furnace at $40,000 by one and $50,000 by another. The furnace property in 3d Ward, Columbia, belonging to the Chestnut Hill Iron Co., at $120,000.

Maxwell, Bradley & Co.'s Fire Brick Works, at Layton, have again resumed work, averaging 3000 bricks per day, most of which are shipped to Pittsburgh.

During week ending February 26th there were 386 cars of coke transfered at Everson's, from Mt. Pleasant Branch B. & O. R. R. to S. W. Penn R. R.

Eight furnaces in the Allentown Rolling Mill went into full operation last week. About 125 men will be employed, but how long work will be continued is not known.

The Greenville Iron Co. are running on barrel hoops for the Standard Oil Co., Cleveland.

The Lebanon Rolling Mill is at present engaged in the manufacture of pipe and other iron, turning out about 70 tons per week.

A knife is being made at the Beaver Falls Cutlery Co. for the Centennial. It will be 9 feet long, and upon it will be pictures of William Penn and Governor Hartranft.

The new mill of the Glasgow Iron Company is fast approaching completion, and will be ready to go into operation in about two weeks. The machinery for this mill was made at the Scott Foundry, in this city, and is said to be finely finished.—*Reading (Pa.) Times.*

At the Westerman Iron Works, Sharon, the sheet mill has started on double turn. The iron made by the two furnaces is all used at the Westerman mills.

Hughes & Patterson, Philadelphia, are reported running double; Rowland, single; Gaulbert, Morgan & Caskey, single; Pencoyd, double.

PITTSBURGH AND VICINITY.

Fire was put in the Lucy Furnace on Wednesday last, and the blast applied Thursday at 10 p. m., getting the first cast Friday. The delay in putting on the blast was occasioned by low gas explosions, which blew out the heads of the gas flue. The furnace was out of blast about six weeks.

Anderson, Maxwell & Porter have received the contract for the iron work of the new building for the First National Bank building, of Allegheny.

Pittsburgh is afflicted with an elephant in the shape of a half constructed water works, the engines of which are known as the Lowry, an untried experiment on so large a scale. Messrs. Mackintosh, Hemphill & Co. have put in a bid to entirely modify the plan, put in two double condensing beam engines with a duty of 24,000,000 gallons each, and put the works in running order for $750,000, and take the old machinery at $150,000.

The Keystone Bridge Co. have received the contract for the Greenfield, Mass., Green River, Railroad Bridge at $46,850. The company have received orders to proceed at once with work on the 150 and 300 feet spans of the new bridge for the Cincinnati Southern Railroad across the Ohio at Cincinnati.

The links for the cable of the new bridge at the Point, which is a suspension with link instead of iron cables, are to be made at the Pittsburgh Locomotive Works. Work was begun on them last week.

Isabella Furnace No. 1, 75x18, now in the fifth week of its present blast, is making 600 tons per week. During this blast not a single cast of hard iron has been made, nor a flush of black cinder. The furnace has seven 7 inch tuyeres, which have become too much for the work the owners desire the furnace to do, and they are blowing with five.

The Butler *Citizen* says: Messrs. Kirk & Dilworth have sold the greater part of their interest in the big gas wells, the Burns and Delamater, in this county, to prominent Pittsburgh manufacturers, who will commence digging trenches and laying pipes from the wells to the city as soon as the weather permits. The line will be over 30 miles long, and will consist of pipes six, eight and ten inches in diameter; the one-third of the line consisting of six inch pipe, being nearest the well, and the ten inch next to the city, which arrangement, it is said, will reduce the friction. The estimated cost of the new line is $500,000.

The trouble with the rollers at Jones & Laughlins has been settled.

D. R. Porter, who has been in the pig metal business with his brother, J. W. Porter, has opened out for himself at No. 27 Wood street.

The Pennsylvania White Lead Works, formerly B. A. Fahnestock & Co., have sold the white lead branch of their business to C. F. Wells & Co., and will attend only to smelting lead ore.

Messrs. Harbison & Walker are making tuyeres for Bessemer converters 24½ inches long, the largest ever made in this country.

During the past week 103 barges with 1,229,000 bushels of coal have left Pittsburgh for Cincinnati, and 53 barges with 571,000 bushels for Louisville. A bushel is 76 lbs.

The Charlotte Furnace, at Scottdale, Pa., Messrs. Everson, Knap & Co., is making 40 tons per day of strictly neutral iron from ¼ Lake Superior and ¾ native ore, using their own coke made from the run of the mine. The irons of this section are in good demand for mixture in making fine irons, such as hoops and sheets, and are taking the place of charcoal irons. They give these products a beautiful smooth finish.

Messrs. Ripley & Co's. Glass Works resumed operations Monday. Messrs. Doyle & Co. have just started fires in their furnace, but it will require two weeks to get warmed up. Atterbury & Co. and Duncan & Co. are also running. Messrs. Adams Sons & Co. are running, using coal gas. The gas is made from slack costing two cents per bushel, and 180 bushels a day will run the works, two men only being required to act as "teasers." Using nut coal, the factories consume 250 bushels daily, and pay four cents per bushel for it, and it makes the work of the "teasers" trifling compared with the labor they now perform. The cost of construction is pretty heavy, but the firm is pleased with the success of the experiment, and will shortly have both furnaces running with gas fuel.

MARYLAND.

The rail mill of the Baltimore & Ohio Railroad, at Cumberland, is about to resume operations, a portion being already running.

The Abbott Iron Company, Baltimore, have started their rail mill on orders for new rails.

WEST VIRGINIA.

The muck rollers at the Top Mill, Wheeling, struck last week against a reduction of 10 cents per ton. They were receiving 70 cents. After an idleness of a day or two they went in at the reduction.

The Crescent Mill, Wheeling, is at work on sheet iron.

OHIO.

Lawrence Furnace, Ironton, blew out on the 1st, in consequence of the hearth giving out.

The Alice Furnace, Ætna Iron Co., Ironton, has been out of blast a few days for want of coke. This seems to indicate that the Ferrie system is not working satisfactorily.

Hamden Furnace is the only one in blast in Vinton county; Cincinnati, Eagle, Hope and Richland charcoal furnaces are the others. Vinton, stone coal, is also out.

Howard Furnace, Ironton, is in blast on stone coal.

There is prospect of a glass works being erected at Wellsville at an early day.

Center Furnace, Ironton, blew out on the 27th of February, and will not make another blast this year.

The chimney workers at the National Glass Works, Bellaire, struck on Wednesday last. The managers had notified the employes that, although the wages would remain the same as heretofore for a "move," the "move" would be increased from 300 to 330. To this the blowers objected, and the parties failing to come to an understanding, the bars were pulled.

The Hubbard *Vindicator* says: Andrews & Hitchcock have disposed of all the iron on hand at their furnaces, and have orders sufficient to keep their works running full blast for some time to come. The same paper says there is also a certainty of the rolling mill starting up on or before the 1st of April.

Both the old and new mills at the Enterprise Iron Works, Youngstown, started up double turn last week. The works have run only single turn since Christmas. Prospects for spring trade good.

It is asserted that there is but little ore on hand at Cleveland unsold, one statement placing it as low as 6000 to 8000 tons.

Both mills of the Union Iron Company, Cleveland, are running steadily, at an average rate of production.

The Lake Shore Mill, of the Cleveland Rolling Mill Company, has shut down for general repairs to the rail mills.

The Standard Iron Company, Cleveland, hope to start up early in March, although there is no certainty as yet as to their doing so.

The blooming mill and rod mill No. 3, of the Cleveland Rolling Mill Company, started up on last Wednesday. The puddling will be resumed on Thursday night.

The King Iron Bridge Company, Cleveland, are building a bridge 126 feet long at Santa Rosa, Cal. With the completion of this order they will have built a bridge in every state in the Union.

The Girard Furnace is in blast making over 400 tons per week.

The following is the industrial condition at Canton: Bolton, Meyers & Co.'s large steel works continue to run day and night, and yet fail to fill orders as promptly as they would like to. The Wrought Iron Bridge Company's works are running fourteen hours per day and will continue on that schedule. C. Aultman & Co., and Russell & Co. expect to turn out a larger number of agricultural machines than usual this summer. All other shops are running prosperously, except the Aldine Press Works, B. F. Renick & Co., who have gone into bankruptcy.

Ballard, Fast & Co., Canton, manufacturers of reaper and mower knives, saws, springs, etc., recently erected an addition to their works, 240 by 100 feet, containing fifteen shaping and heating furnaces and other apparatus, and machinery for the manufacture of carriage and wagon springs exclusively. This new addition gives employment to sixty men now, and the number will be soon increased to one hundred, as it is with difficulty they can keep up with their orders.

Two of the four Bessemer converters in the Cleveland Rolling Mill Company's Works have been replaced by Siemens' furnaces.

The Columbus *State Journal* says that there is a proposition on foot to consolidate the two blast furnaces and rolling mill in that city, and turn the attention of the new enterprise to the manufacture of steel. The two blast furnaces of that city have been idle for some time and are likely to be idle for some time longer.

ILLINOIS.

Rockford has one of the three tack factories in the West. The others are Chess, Smythe & Co. Pittsburgh, and the Norway Tack Co., Wheeling. They have 50, 55 and 20 machines respectively.

It is stated that the Joseph H. Brown Iron and Steel Co., of South Chicago, whose works are in process of construction, have decided to add blast furnaces, a rail mill and a nail mill to their plant.

A new rail factory is about to be started at Dunleith. The Pittsburgh Manufacturing Co. are making the machines.

KENTUCKY.

The Charlotte Furnace, Carter county, formerly the Iron Hills Furnace, is making from 17 to 18 tons of excellent warm blast foundry charcoal iron, running on the Lambert ore vein (from the Lambert and Wilson banks) exclusively, using 70 charges of from 1400 to 1500 pounds ore per 24 hours.

The Hunnewell Furnace is receiving 18 car loads of charcoal per day, from the forests near Hopewell Station on the Eastern Kentucky Railroad.

MISSOURI.

Out of ten steam coal furnaces in and around St. Louis, but two are in blast, and it is reported that both of these are to blow out soon.

Both bar mills at St. Louis are in operation, as well as the Bolt and Iron Co. and the Rail Fastening Co.

The Vulcan Iron Co's mill has been stopped for a couple of weeks for repairs, not having stopped Jan. 1st.

Of ten charcoal furnaces in Missouri but one is in blast.

The new Bessemer works of the Vulcan Iron Co. are rapidly approaching completion, and will be ready to start about April 15.

MICHIGAN.

The dam in the Sault Canal has burst, and communication between Lakes Michigan and Superior, by this route, will be obstructed until the middle of June.

TENNESSEE.

Five tons of red hematite iron ore, from the new "Brown" bank, near White's Creek, came in on the steamer Wilder night before last, for trial by the Chattanooga Iron Company. This ore appears very rich, and the thickness of the vein makes it valuable and easily handled for shipment, the mouth of the bank being within ten rods of the bank of the Tennessee River, and elevated enough to shoot the ore directly into barges.—*Commercial.*

The Springfield (Mass.) Water Commissioners have a machine that looks like a half-grown fire engine, which is intended to thaw out hydrants, water pipes, sewer drains and whatever else is liable to freeze, and which consists simply of a boiler with a fire-box for generating steam, with connections for small hose, the whole on a light running gear. It is found possible with this machine to work through 5 or 6 feet of frozen ground in an incredibly short space of time. The water board paid the fire department over $500 last winter for thawing out the hydrants.

Empire Portable Forge.

Up to a very recent date, say within the last six years, a great change has been made in the construction of portable forges. Previously the bellows had been considered essential, and, although rotary blowers had been used, yet the forges produced were expensive, so that their introduction was limited to the few. The blowers were generally run with a belt, and the power applied with a crank, which was by

Fig. 1.

no means the most comfortable or easy way of accomplishing the desired result.

In the Empire forges, by the Empire Portable Forge Co., Troy, N. Y., the bellows is supplanted by a rotary blower driven by gearing. Power is applied to the gearing by means of a lever, from which a connecting and a crank transfers power to the first wheel of the gearing. The motion of this lever is like that of the bellows lever, or of a pump handle. The

Fig. 2.

company make a great variety of these forges to suit all kinds of work. There are at present on their list some 28 different varieties.

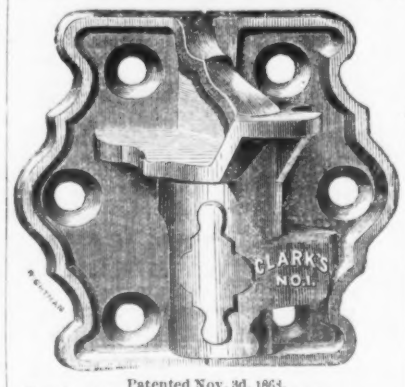
Figure 1 represents one of their latest patterns, "No. 12," a cheap, small forge combining all the essential features of the larger sizes. It has a capacity for welding 3 inch iron. These are designed for all sorts of light work, repairing and the like in machine shops. They weigh only 50 lbs., and are easily carried about for rivet work. The next size is No. 10.

Fig. 3.

This has wrought iron legs, and is especially adapted to the use of miners, quarrymen and similar work. This machine is shown in Fig. 2. As these forges are constructed entirely of metal, they stand exposure to the weather without injury, lasting well whether out doors or inside. The No. 11 forge, shown in Fig. 3, is considered by the manufacturers as being a little ahead of anything in this line. This has a hood with doors for shop use. A pipe is attached on, and this forge can be used with as great safety from fire as a common stove. A large number of these are used in mills and machine shops. This size is shown driven by friction gearing instead of toothed wheels. This style can be arranged to run by power, but they can, at the same time, be instantaneously disconnected and run by hand. This pattern is in use in a great many of the U. S. Navy Yards.

Clark's Improved Blind Hinge.

In this device both the upper and lower hinges are alike. The hinge is cast complete in two parts. When open the blinds are held parallel with the house and not against it. The manufacturers claim that these hinges will not allow the blind to rattle nor close by the wind. In lifting the blind to unlock the hinge a stop



Patented Nov. 3d, 1864.
New Locking Device, patented Oct. 27, 1874.
Trade Mark "Gravity Locking Blind Hinge," registered Aug. 31, 1875.
Design, patented Jan. 11th, 1876.

prevents the hinge from coming apart. When dropped into place, the shape of the pintle is such that it cannot turn. These points can readily be seen upon an inspection of the hinge, but are not easily described. Clark's blind hinge is manufactured only by Clark & Co., of Buffalo, New York.

The Loyalty of Labor.

We mention, in another place, the suspension of Messrs. Zug & Co., of Pittsburgh, and only refer to it again for the purpose of commending the action of their workmen, which is one of those spontaneous outbursts that show that there is still an under stratum of good feeling and kindly regard between labor and capital under all the passion of conflict and strife.

Last Saturday was the regular semi-monthly pay day at Messrs. Zug & Co's mill, and when the three hundred employes quit work they were informed by the proprietors that they were unable to pay them the two weeks wages due them. The men, who understood the situation, organized a meeting and appointed committees from the different classes employed at the mill to wait on the proprietors and ascertain the prospects of the firm for resumption.

Mr. Zug stated the case, ascribing the immediate cause of his suspension to endorsing for his son-in-law. He did not know how affairs would turn out, but he hoped to be able to secure an extension, in which case he believed they would weather the storm.

The committee then returned to the meeting of the employes, and, upon making their report, the following was adopted unanimously:

WHEREAS, The firm of Zug & Co. have been compelled to suspend owing to financial difficulties, brought about by the present unfortunate condition of trade. Therefore be it

Resolved, That we extend to Messrs. C. and C. H. Zug, comprising said firm, our heartfelt sympathies in this the hour of their misfortune. That appreciating their past kindness, we feel it incumbent on us to offer the labor of our hands at one-half the usual compensation for the period of three months or longer, if such action on our part will assist them, and trust that those having it in their power will extend to them that assistance which they merit as men of honesty and integrity.

On Saturday last the Woodward Steam Pump Manufacturing Company, of No. 81 Centre street, N. Y., made an assignment to William T. Francis. This company received an extension of one and two years from its creditors last March, and now, finding itself unable to meet its engagements, has considered it the better course to pursue to make an assignment. The officers of the company, who are now engaged in the work of making up a statement of their affairs, hope to make such arrangements as will permit them to continue.

Special Notices.

Wanted,

some manufacturer to buy the patent of the

IMPROVED SMOOTHING IRON

described on page 5, issue January 20, 1876, No. 3, Vol. XVI. of *The Iron Age*, or to make the same on royalty. Address

R. H. HASENRITTER, Herman, Mo.

VENTILATING & STEAM HEATING.

A thoroughly competent engineer, with extensive experience in the above line, desires employment.

Address M.,
Office of *The Iron Age*, 10 Warren St., N. Y.

Business Opportunities.

New Capital Procured, Partnerships Arranged, and Commercial, Mining and Banking Corporations Organized, by

CLARKE, CHITTY & CLARKE,
Board of Trade Offices, New York.
P. O. BOX, 4071.

A. PURVES & SON,
Corner South & Penn Streets, Phila.,
Dealers in
Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass.
Cash paid for all kinds of **Metals** and **Tools.**

DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, N. J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings

in quantities to order at reasonable rates.

HERMANN BOKER & CO., Proprietors,
101 & 103 Duane St., N. Y.

Special Notices.

WANTED TO PURCHASE.

The most improved Horse Nail Machinery. Parties manufacturing the same will please

Address, P. Y.,
Office of *The Iron Age*, 10 Warren St., N. Y.

CENTENNIAL EXHIBITION.

A young man, a native of this city, with good references, having had large experience in the Hardware Trade, offers his services in receiving, arranging and keeping goods in order during the exhibition. Terms moderate. Address,

JOSEPH K. PARKER,
461 North 2nd Street, Philadelphia.

THE UNDERSIGNED have this day formed a Co-partnership under the firm name and style of DANIEL W. RICHARDS & CO., for the purpose of transacting an importing and general Iron and Metal business, 88 to 104 Mangin Street.

DANIEL W. RICHARDS,
MORTON B. SMITH.
EDWARD HILL.

NEW YORK, March 1, 1876.

IMPORTANT
Hardware Auction Notice.
On Three Months Credit.
The entire stock of
HARDWARE, CUTLERY, &c.
of the
SCHWEITZER MFG. CO.,
Who are retiring from business, will be
SOLD AT AUCTION,
At No. 57 Reade Street, N. Y.
By BISSELL, WELLES & MILLET,
Commencing.
Tuesday, March 14, and continued until the ENTIRE STOCK is disposed of.

This will be the largest sale of Hardware ever made in the United States, the inventory of which on Jan. 1 was over **$76,000.** There will be from 3000 to 4000 lots, making a catalogue of 150 to 200 pages. The lines of goods are large, new and staple. It is impossible in an advertisement like this to enumerate the different classes of goods, their variety being so great. For the convenience of those who desire it we will forward a list and quantities of the leading goods that are to be sold.

The Sale is Peremptory.

Catalogues will be issued at as early a date as possible.

TERMS OF SALE.

All bills over $500 a credit of three months will be given or approved paper, with interest added at the rate of seven per cent. per annum; under $500, cash.

BISSELL, WELLES & MILLET,
Auctioneers, 15 Murray St., N. Y.

TO LET—THE WORKS OF THE
CHICAGO
Plate and Bar Mill Co.,
INCLUDING
GALVANIZING WORKS,
the whole complete and ready for operation. Only works in the State, or west of Cleveland, making Boiler Plate, Sheet and Galvanized Metals. Large trade established. Address

J. M. AYER,
Care *J. V. Ayer & Sons, Chicago, Ill.*

Partner Wanted.

One who can furnish from $5000 to $10,000 cash capital, for a one-half interest in a Foundry business, established 10 years, having a good jobbing trade, also manufacturing Butt Hinges, also other articles of Builders' Hardware. Satisfactory reference given and required. For further particulars address

Box 26,
Office of *The Iron Age*, 10 Warren St., N. Y.

Special Notice.
JUST ISSUED.—Seed & Agricultural Implement Catalogue.
200 Illustrations and Price List mailed on receipt of 10c.
A. B. COHU,
197 Water Street, N. Y.

Wanted.

A situation as Manager of Rolling Mill. Plates and Sheet Iron preferred. First-class references. Address **I. E.,**
Portsmouth, O., Lock Box 702

Partner Wanted,

In large Iron Property. Charcoal Furnace and Forge Works leased for $12,000 per annum, quarterly payments. Room for other works. Make best quality metal. Address

P. O. Box 863, Baltimore, Md.

To Manufacturers and Patentees.

Wanted useful patented articles for manufacture, suitable for sale by hardware dealers. Cash will be paid for patents or advance made for royalty.

Address, **P. P. PRATT,**
Care **PRATT & CO., Buffalo, N. Y.**

DISCOUNT LISTS.

Hinges { Stanley Works' list...10 % to 50 % each, 75c.
and Butts, { Union Mfg Co.'s.....10 % to 60 % " 75c.
Bolt, File and Hinge and Butt List.—Contains all the lists and discounts that are used.....Price $1 00
Dayton & Lamberson, 97 Chambers St., N. Y.

Worcester Free Institute.
APPRENTICE CLASS,
Enter January 29. Address,
Prof. C. O. THOMPSON,
Worcester, Mass.

HARDWARE SPECIALTIES
Manufactured to order on favorable terms.
POWER AND ROOM to Rent by the
CORRUGATED METAL CO., East Berlin, Ct.

Special Notices.

SPECIAL NOTICE.

I have three patents for Dies, Machinery, and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1865; January 31, 1866, and July 3, 1866. **There is a special claim on each of the Dies.** All persons infringing on said patents will be held responsible to the extent of the law. **Russell Jennings.**
DEEP RIVER, Conn., Sept. 7, 1874.

WANTED TO PURCHASE,
100 tons good Second-Hand T Rails, 18 or 20 lbs. per yard.
Address, giving particulars,
PIPER & THOMPSON,
Lapeer, Mich.

TO LET,
A Light, Handsome Office.
Possession Immediately.
HERMANN BOKER & CO.,
101 Duane Street, N. Y.

MANUFACTURERS

desirous of introducing their goods to the **British** and **Continental** Markets, are advised to insert advertisements in the newspaper **"IRON,"** published every Saturday, at ***99 Cannon Street, London, E. C.***

SCALE: First 3 lines, 3/; every additional line, 10d. Price, 6d. per Copy, or 30/ per annum, inclusive of postage to the United States.

HALL & HARBESON,
Manufacturers of
Chemical & Physical Instruments,
191 Greenwich Street, N. Y.
SPECIALTY.—BUNSEN'S GAS BURNERS, for all heating purposes; BUNSEN'S IMPROVED GAS COMBUSTION FURNACES, with 10, 15 and 25 burners. Fine Brass and Metal Work made to order for Metallurgists, Chemists, Experimenters, Colleges, &c.

Steel Castings.

Solid and Homogeneous. Guaranteed tensile strength, 75 tons to square inch. An invaluable substitute for expensive forgings, or for Cast Iron requiring great strength. Send for circular and price list to

CHESTER STEEL CASTINGS CO.,
Evelina St., Philadelphia, Pa.

Wanted—A Partner,

In a foundry and machine business, already well established. Locality splendid and healthy.

A practical man with means is wanted to join a practical man who is already well established.

Address *CAR WHEEL FOUNDRY,*
P. O. Box 134, Selma, Alabama.

Briesen's Patent Agency
FOR SECURING INVENTIONS, TRADE MARKS, &c., IN AMERICA AND EUROPE,
No. 258 Broadway, New York.
A. V. BRIESEN.

WANTED.—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address,

IRON AND STEEL,
Care of *P. O. Box 813, Bridgeport, Conn.*

NOTICE! POND'S TOOLS.

The undersigned has assumed the Personal Property, including accounts, finished and unfinished Machinery, good will &c., connected with the manufacture of MACHINIST'S TOOLS as conducted by Mr. Lucius W. Pond since 1847, and will continue the said business at the old stand, cor. Union and Exchange Sts., Worcester, Mass., under the name of DAVID W. POND, Successor to Lucius W. Pond.

CARD.—Having assumed the business mentioned above, I solicit Inquiry and Patronage, with guarantee that present standard of Workmanship, and quality of Machinery shall be maintained. A large quantity of NEW AND SECOND-HAND TOOLS, ALL STYLES AND SIZES, For Sale at Low Prices. Send for list of second-hand tools. Store at 98 Liberty St., New York, will be discontinued from Feb. 1, 1876, and all sales made from manufactory.

Respectfully, **DAVID W. POND,**
Successor to LUCIUS W. POND.

DISSOLUTION OF COPARTNERSHIP

The firm of McClernan & Hymes is this day dissolved by mutual consent. The business of the firm will be liquidated by M. McClernan alone, No. 130 Liberty Street.

NEW YORK, Jan. 20, 1876. M. McCLERNAN, D. HYMES.

For Sale, &c.

Mortgage Sale of Charcoal Furnaces, also 1700 tons of charcoal pig metal, good car wheel and Bessemer pig iron, according to grades (1, 2, 3, 4, 5) to be sold at auction, March 7th, 1876, 10 o'clock, a. m., on premises, at Port Leydon, Lewis Co., New York. The property consists of 2 stacks, 9 feet bosh, one in complete working order; will make 10 tons *each* per day. Water power (about 300 horse), 18 acres in furnace lot in fee (on which are furnaces, tank and machinery houses, coal sheds, office building, large boarding house for laborers, and four other houses for families; also large mine of magnetic ore on same plot); also, 1000 acres of wood land in fee, hardwood on 20,000 acres adjoining land, 50 cents an acre royalty. Charcoal iron can be made at these furnaces now for $25 or less a ton. Large quantities of iron made by these furnaces have been sold to and used by leading car wheel and other manufactories with perfect satisfaction. Your attention is particularly called to the sale of both furnaces, pig iron and materials, 28,000 bushels of charcoal, tools, etc. The furnace could be put in blast in 30 days. The Utica and Black River Railroad and Black River Canal pass within a few hundred yards of the furnace. The iron will be sold in lots to suit purchasers.

T. H. WAGSTAFF,
Sec'y of Black River Iron and Mining Co.,
61 Broadway, N. Y., Room 58.

For Sale in Raynham, Mass.,
Nail Works,

consisting of nearly new buildings. The Machinery is complete, consisting in part of **20 nail machines** (capable of making **Tacks, 3d. Fine** and other **Small Nails**); Boiler and Vats for pickling; Rattlers and Blueing Machinery; **50 Horse Power Water Wheel.**

These Works were formerly known as the

Rayenham Tack Works,

are in the best condition and now running. Will be sold low for cash or on favorable terms by

LEEDS, ROBINSON & CO.,
75 North Street, Boston.

HARDWARE STORE, FOR SALE.

Is one of two stores situated in a city of seven thousand inhabitants, three railroads, fine country surrounding. Best of reasons for selling. For further information, address, **KING & SON,**
Lima, Allen Co., Ohio.

For Sale.

BLACK WALNUT
For Sale Cheap.

Large quantities of pieces of plank suitable for turning and sawing into any article requiring such wood.

Perfectly Dry and Sound.
PROVIDENCE TOOL CO.,
Providence, R. I.

FOR SALE.

Hardware, Tin and Stove business, in one of the best towns in Michigan. Can be bought on easy terms. Address, **Box 168,**
South Bay City, Mich.

FOR SALE.
Valuable Iron Property.

The Rolling Mill, Nail Factory, Blast Furnace, Ores, Lands, &c., of the Hollidaysburg, and Gap Iron Works, formerly known as the Juniata Iron Co., at Hollidaysburg, Blair County, Pa., are offered for sale separately or as a whole. Terms easy.

If not sold or otherwise disposed of prior, the entire property will be offered at Public Sale at the American House, in Hollidaysburg, *Wednesday, March 15, 1876, 11 o'clock A. M.*

No more desirable property in the market. For further information, address,

A. K. BELL, President,
Hollidaysburg, Pa.

FEBRUARY 7, 1876.

AT FURNACE SITE,
☞ On the 23d Mar. 1876, at 12 o'clock, Noon.
FOR SALE at Public Auction
The Napanock Blast Furnace Property.

Description of the furnace is about as follows: Hight of stack 46 feet high, and 12 feet bosh, built of stone to top of bosh, thence up of brick banded with heavy iron; lining is of fire brick 20 inches thick. Hearth and boen are of fire brick. Tunnel head is 6 feet diameter. Hot blast was erected by Mr. McHose, of Reading, Pa.; is first-class, almost new. The power is of water, said to be of double the capacity; one of the best water powers in the State. Wheel is overshot, 26 feet diameter 6½ feet face. Capacity of furnace 20 tons Anthracite iron or 15 tons of charcoal iron. Woodland is abundant, from $3 to $6 per acre, for many years. Ores by railroad or by Delaware and Hudson Canal, which passes Napanock, which is a thriving place, two miles from Ellenville, Ulster Co., New York.

For further particulars, apply at furnace or of

H. BANGE,
94 Gold Street, New York City.

FOR SALE.

TESTING MACHINE, built by the South Boston Iron Co., arranged for tensile and compressive strains, capacity 150 tons.
MILLING MACHINE, built by Brainard Milling Machine Co., cutters swing 38 inches diameter, and spindle set at right angles, which insures accurate work
IRON ROOF, that covered New England Iron Co.'s Mill, 8 arches 80 feet span, posts 18 feet high, building now 80 feet wide by 90 feet long.
ROLLING TABLE, for straightening iron.
PUDDLE TRAIN, for Billets and 3, 4 and 6 inch Bars.
FIVE DRILLS.
CORRUGATING MACHINE, Complete.
CORRUGATED SHEET IRON and barbed Nails.
SMALL UPRIGHT ENGINE, 15 H. P., inch cylinder.
PUMPS, Etc.
Apply to **WM. E. COFFIN & CO.,**
8 Oliver Street, Boston.

HARDWARE BUSINESS
For Sale.

In the city of Norwich, Conn., an old stand facing two streets. Rents low. Good help and doing a prosperous business. Large back country. The best of reasons given for selling. Address,

FULLER & PARISH, Norwich, Conn.

FOR SALE.
At Lowest Manufacturers' Rates,
GUNS & SHEET ZINC,
Best German and Belgian Brands,
By *LOUIS WINDMULLER & ROELKER,*
20 Reade Street, N. Y.

FOR SALE.

An ¾ inch mill train for making Merchant, Band and Hoop Iron. Will be sold cheap.

Apply to **W. W. JONES,**
Near the Lehigh Valley Railroad Depot,
Allentown, Pa.

For Sale,
Stove and Tin Business.

Will sell, on good terms, one of the best arranged House Furnishing Stores in Canada West, at St. Thomas. The premises are roomy, the buildings having been arranged especially for this trade, with Tinsmith's workshops and benches complete for 12 men.

Present Stock about $6000.

St. Thomas is the head quarters of the Canadian Southern Railway Co. To a practical, energetic man this offers unusual advantages. Business well established and with good connection. Reason for disposal, present proprietors increasing their wholesale and retail Hardware Store next door to the above premises. Address

HORSMAN & HORSMAN,
Iron and Hardware Merchants,
St. Thomas, Canada West.

FOR SALE,

at 10c. a copy, Weekly Spanish Review and Prices Current. The undersigned is also a *Translator* from and into the English, Spanish, French and German. *Latest Translations made:* for the governments of Germany and Spain, Pacific Mail S. S. Co., Walter A. Wood; Morris, Wheeler & Co.; Todd & Rafferty; John T. Dunkin; Fisk & Hatch; R. W. Wilde; Wilson Sewing Machine Co.; J. Hess & Co.; H. Marquardt; M. Echeverria & Co., and Chas. E. Little, New York; Hocking Valley Mfg. Co.; W. P. Potts, Son & Co., Phila.; Atlantic and Pacific Land Co.; B. E. Flemming, Jersey City; Wilder & Co., Savannah, and the Tanite Co.; Stroudsburg ("Emery Grinder"), to whom he refers.

☞ **Estimates furnished of translations and setting up of Spanish, German and French Catalogues for the Centennial.**

C. KIRCHHOFF,
Metal Reporter of "The Iron Age,"
Box 3091, New York P. O.

Trade Report.

Office of The Iron Age,
Wednesday Evening, March 8, 1876.

The past week has been one of considerable speculative excitement in Wall street. The value of railway stocks has been well maintained. "Miscellaneous" stocks have declined heavily. The money market has been very easy, borrowers on call having been accommodated at 2½ @ 4 per cent., and sellers of prime business paper having very little difficulty in getting discounts at 4½ @ 5 per cent.

The gold market has been unsettled, although the fluctuations in the premium have been between 114⅛ and 115. The following shows the highest and lowest daily quotations on the gold room bulletin since our last report:

	Highest.	Lowest.
Thursday	114⅜	114⅛
Friday	115	114⅝
Saturday	114¾	114⅜
Monday	114⅞	114½
Tuesday	114⅝	114¼
Wednesday	114⅜	114⅛

Government bonds are dull and without important feature. Rumors were circulated in London that the credit of the Government was affected by the Belknap disclosures, and the suspicion which rests upon nearly all departments of the government, but those did not cause any decline in the prices of American securities. Railroad mortgages are firm, and there is a moderately active demand for all classes of investment securities. We give below the prices of government bonds in this market at the close of business to day.

In the stock market everything has suffered decline during the early part of the week, and railway shares were the only ones to recover. The principal dealings have been in Pacific Mail, which suffered heavily from the announcement that an opposition line had been started on the Pacific, and Western Union—which suffered from the active competition of other telegraph companies—Lake Shore, Erie, St. Paul, Northwest and other railway stocks. We give below the quotations of active shares at the close of business to-day.

The bank statement showed a decrease in surplus reserve of $594,750, it now amounting to $13,040,200. There was a gain of $1,995,400 specie, which can be explained by the heavy coin disbursement of the Treasury for called 5-20 bonds, and, since the 1st instant, for interest on the public debt. There was a decrease of $2,067,900 in legal tender notes which was not clearly explainable. The present method of making up the bank statements on averages for the week does not give a clear idea of the actual condition at the end of the week; and, as we have often urged, should be supplemented with a statement showing the actual amount of loans, specie, legal tenders, deposits, circulation and, even national bank notes, at the beginning of business Saturday morning, the end of the bank week being the close of business Friday. The following is a comparison of the bank averages for the past two weeks:

	Feb. 26.	March 4.	Differences.
Loans	$268,480,000	$270,162,800	Inc..$1,682,800
Specie	20,706,200	22,701 600	Inc...1,995,400
Legal tend's.	49,013,100	46,945,200	Dec.. 2,067,900
Deposits	224,337,400	226,426,400	Inc... 2,089,000
Circulation.	17,022,000	16,832,500	Dec.. 189,500

The following table shows the foreign trade movements for the week:

IMPORTS.

For the week ended March 4:

	1874.	1875.	1876.
Total for week..	$8,643,543	$10,819,858	$6,630,654
Prev. reported..	62,042,909	56,000,053	53,764,883
Since Jan 1....	$70,686,452	$66,819,911	$50,404,537

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value.
Anvils	66	$871
Brass goods	47	5,696
Bismuth	4	1,551
Bronzes	7	2,679
Chains and anchors	110	5,448
Copper		115
Cutlery	89	29,962
Guns	15	3,547
Hardware	12	1,249
Iron, pig, tons	310	5,509
Iron, sheet, tons	6	656
Iron, other, tons	369	20,915
Lead, pigs	1,000	6,090
Metal goods	113	17,268
Nails	7	1,193
Needles	23	6,143
Old metal		5,640
Per. caps	8	1,003
Saddlery	22	725
Steel	697	10,030
Tin, boxes	14,231	83,238
Tin, 5010 slabs	508,611	91,175
Wire	1308	10.591

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended March 7:

	1874.	1875.	1876.
Total for week..	$5,338,161	$5,242,000	$5,226,840
Prev. reported..	47,412,349	39,361,336	42,148,919
Since Jan. 1.....	$52,750,510	$44,603,336	$47,375,759

EXPORTS OF SPECIE.

For the week ended March 4:

Total for the week	$11,432
Previously reported	571,458
Total since Jan. 1, 1876	$582,890
Same time in 1875	2,421,692
Same time in 1874	1,091,677
Same time in 1873	219,007
Same time in 1872	278,115

Government bonds at the close were firm at the following quotations:

	Bid.	Asked.
U. S. Currency 6s.	126½	127
U. S. 6s 1881, reg.	122⅞	122⅞
U. S. 6s. 1881, cou.	123	123¼
U. S. 5-20 1865, reg.	118⅝	118¾
U. S. 5-20 1865, cou.	118	118¾
U. S. 5-20 1865, new reg.	119⅝	119⅞
U. S. 5-20 1865, cou.	119⅝	119¾
U. S. 5-20 1867, reg.	121¾	121⅞
U. S. 5-20 1867, cou.	121¾	121⅞
U. S. 5-20 1868, reg.	123	123⅜
U. S. 5-20 1868, cou.	123	123⅜
U. S. 10-40 reg.	118⅞	118⅞
U. S. 10-40 cou.	119	119¼
U. S. 5s. 1881, reg.	118⅝	118¾
U. S. 5s, 1881, cou.	118⅝	118⅞

The following are the closing quotations of active shares:

	Bid.	Asked.
Atlantic & Pacific R. R. Preferred	4½	4¾
Atlantic and Pacific Telegraph	19	20
Chicago & Northwestern	43⅝	43⅞
" " Pref.	64½	65
Chicago, Rock Island and Pacific	110½	110¾
Chic., Bur. & Quincy	119½	120
Col., Chic. & Ind. Cent.	4½	4¾
Clev., Col., Cin. & Ind's	53½	54
Cleveland and Pittsburgh	95½	96
Chicago & Alton	102¾	103¼
" " Pref	109	—
*Consolidation Coal	41½	41¾
Canton	42½	44
Del. Lack. and Western	117⅞	118⅞
Delaware & Hudson Canal	119½	119¾
Adams Express	106½	107
American Express	62½	63
United States Express	74½	75
Wells, Fargo & Co. Express	87	87½
Erie	17⅞	18
Harlem	143	144
Hannibal & St. Joseph	18½	18¾
" " Pref	28	29½
Illinois Central	102	102½
Kansas Pacific	12	12¾
Kansas & Texas	13	13⅛
Lake Shore	64¼	64⅜
Michigan Central	62⅜	62⅞
Morris & Essex	105	106
Milwaukee & St. Paul	43⅜	43½
" Pref.	80	80¼
Mariposa	7½	9
" Pref.	7½	9
New York Central	116	116¼
New Jersey Central	106⅞	106⅜
New Jersey Southern	1	¾
Ohio & Mississippi	21⅛	21¼
" " Preferred	39⅞	40⅛
Pacific Mail	22¼	22⅜
Panama	135	—
Pittsburgh & Fort Wayne	103¼	105
Pacific of Missouri	12	12¾
Quicksilver	17½	19
" Pref.	22	24
St. Louis and Iron Mountain	26⅛	26⅜
St. L., Kan. City Northern	6½	6¾
" " Pref.	30⅞	32
Tol., Wabash & Western	3	3⅛
Union Pacific	68⅛	69
Western Union Telegraph	68⅞	67½

* Ex dividend.

GENERAL HARDWARE.

A good deal of disappointment is expressed in Hardware circles regarding the condition of the trade, the demand so far falling short of what it is reasonable to expect at this season. The scarcity of buyers from a distance is, we think, in a great measure accounted for by the reasonable desire on the part of the community to visit the Centennial Exposition; and, doubtless, many of this class will postpone their usual spring visit until after the grand opening in May next. In the meantime a good deal of business is being picked up by commercial travelers, and we hear less complaint from those houses who depend for a large portion of their trade to their efforts, than from the more conservative ones who still adhere as closely as they can to the old plan of selling their customers when they visit the market. The changes in prices during the week can be told in a few words. The general tone of the market is strong for almost every description of Hardware.

The Russell & Erwin Manufacturing Co., having completed their Screw Factory, have issued the following circular, reducing the price of Flat Head Wood Screws to discount 50 per cent. Up to this writing no action has been taken by the other companies.

SCREWS.

We take pleasure in informing the trade that our Screw Manufactory, at New Britain, Conn., is completed, and that we are now making over one thousand gross of Wood Screws per day, and are increasing the quantity and the number of sizes as rapidly as new machinery can be placed.

Until further notice we will sell our production at 50 per cent. discount from list, cash, 30 days. No prices guaranteed.

With our improved machinery we are able to guarantee the quality and finish of our Screws as fully equal to any manufactured, and we solicit orders to the extent of our production.

Respectfully yours,
Russell & Erwin Manufacturing Co.
New York, March 6, 1876.

With the exception of a better inquiry and a general belief that Nails have touched bottom, there is nothing to report more than a repetition of the figures of last week. We quote as before, 10d., $2·85, net. In lots a concession of from 5 to 10 cents per keg could be obtained, according to brand.

The manufacturers of plumbers' copper goods have advanced prices to discount 10 per cent. The following circular, in this connection, explains itself:

New York, March 4, 1876.

In consequence of the advance in prices of manufactured Copper goods, our price to the trade will be, until further notice, 10 per cent. from the present price list. Yours, truly,
Peck Bros. & Co., 73 Beekman street.

Tatham & Brothers, No. 82 Beekman street, have issued the following revised price list today:

Cash Prices, March 8, 1876.

	Cents.
Buck Shot	11
Drop Shot	10
Shot in 5 lb. bags, 1c. in advance.	
Bar Lead	9
Lead Pipe	9½
Sheet Lead	10
Block Tin Pipe	45
Tin Lined Pipe	16½

No Cartage on Shot in lots of 1000 lbs.
We allow for Old Lead, in trade, 6½ cents per pound.
Full net price allowed for all Reels and Packages returned to us in good order.
Discount to dealers as usual.

Leonard Bailey & Co., Hartford, Conn., have issued their illustrated catalogue and discount sheet under date of 1st instant. The book contains illustrations of the different styles of "Victor" patent Iron Planes; Bailey's patent Combination Plane; Bailey's patent Try Squares and Bevels; Johnson & Tainter's Automatic Boring Tools. In addition to the goods of their own manufacture, they present lists and illustrations of Stephens & Co.'s Boxwood and Ivory Rules; Stratton Bros. Plumbs and Levels; H. Hammond's Adze Eye C. S. Hammers; and the Langdon Adjustable Mitre Box. The following is their discount sheet:

DISCOUNT SHEET OF LEONARD BAILEY & CO.
March 1, 1876.

Catalogue Pages.		Dis. per Cent.
4—8,	Planes	25&10
9,	Try Squares	20&10
10,	Bevels	20&10
12—16,	Rules, Boxwood, Stephens & Co.'s	60&10
	" Ivory	50&10
	" Miscellaneous	50&10
17—18,	Plumb and Levels, Bound, Stratton Bros	30
19—20,	Plumb and Levels, Stratton Bros	50
21—23,	Hammers, H. Hammond's	12
11,	Automatic Boring Tool	25
24—28,	Mitre Boxes, Langdon's	25

Terms, net cash, payable in New York or Boston Current Funds.
Invoices remaining unpaid after 30 days from their date will be subject to a sight draft.
All goods at the risk of purchaser after shipment.

Geo. N. Stearns & Co., Syracuse, N. Y., have issued the following "supplemental catalogue" and discount sheet for their Hardware specialties, under date of 1st ultimo. "Terms, net cash, payable in 30 days from date of invoice. Funds par in New York, Boston, or Philadelphia. We make no allowance for exchange."

Page.		Per doz.	Dis't.
	HOLLOW AUGERS. Stearn's Patent		
4	No. 1, Adjustable	$48·00	25
5	No. 2, Expansion	48·00	25
6	Bonney's Adjustable	48·00	25
7	Patent Expansion Fore Auger	27·00	15
8	Stearn's Spoke Pointers	10·00	25
	Bit Brace.		
13	Backus' Patent, per dozen, 6 8 10 12 14 / 21, 24, 27, 30·00 33·00	33·00	40
	Backus' Patent Angular Borer	24·00	40
Sup.	Body Makers' Corner Clamps.		
4	No. 1, 6 inch	9·00	25
	No. 2, 9 inch	15·00	25
11	Breast Drills.		
	No. 1	40·00	25
	No. 2	48·00	25
8	Bench Hooks.		
	Skinner's Patent	8·00	30
Sup.	Box Scraper.		
1	Stearns' Pattern	6·00	25
Sup.	Clamps.		
4	Stearns Pattern, No. 1, 3 in	4·00	20
	" " No. 2, 6 in	6·00	20
	" " No. 3, 9 in	7·50	20
10	Countersinks.		
	Wheeler's Patent, plain	4·00	20
	" " with guage	5·00	20
14	Nippers.		
	Hall's Patent Compound Lever, No. 1	15·00	25
	Hall's Patent Compound Lever, No. 2	21·00	25
	Eureka Bevel Edge, No. 1, 5 in	12·00	25
	" Straight Face, No. 1, 5 in.	12·00	25
	Saw Vises.		
Sup. 2	No. 0	12·00	15
15	No. 1	24·00	30
16	No. 2	30·00	30
Sup. 3	No. 3	18·00	25
17	Saw Sets.		
	Aikens' Hammer, Common	4·00	20
	" " Cast Steel	6·00	20
	" " with attachment to screw on a bench	8·75	2
9	Spoke Shaves.		
	Stearns' Iron	4·00	25
Sup.	" New Circle	6·00	25
1	" Concave	4·00	25
18	Clothes Line Holders.		
	Eureka, per gross	15·00	20
17	Tongs.		
	Pat. Steel Swivel Jaw, No. 1, per pair	1·00	15
	Pat. Steel Swivel Jaw, No. 2, per pair	1·00	15
	PADLOCKS.		
19	Scandinavian Security.		
	No. 9, Red. / No. 9½, Black	10·50	25
	No. 10, " / No. 10½, "	12·00	25
	No. 11, " / No. 11½, "	15·00	25
	No. 12, " / No. 12½, "	18·00	25
	No. 13, " / No. 13½, "	22·00	25
20	Iron Padlocks.		
	No. 00000, American	1·15	40
	No. 0000, "	1·15	40
	No. 600, Red and Black	6·00	20
21	No. 601, Red	8·00	20
	No. 602, Black	8·00	20
	No. 603, "	8·50	20
	Brass Padlocks.		
22	No. 620, Silver Plated	15·00	25
	No. 625, Fine Brass	14·00	25
	No. 626, "	15·00	25
	No. 630, "	8·00	25
	No. 631, "	12·00	25

The Russell & Erwin Mfg. Co. have issued, under date of 1st instant, an appendix, to be attached to Volume 2 of their 1875 catalogue, containing description, prices and handsome illustrations of new patterns of real Bronze Builders' Hardware.

Clark & Co., Buffalo, N. Y., have issued an illustrated catalogue and price list for 1876. Among the new goods we notice their "Diamond" Mop and Brush Holder, patented Nov. 30, 1875; also Clark's Improved Blind Hinge No. 1. For a description of the latter article we refer our readers to the illustrated article which we print on page 20.

We print on page 17 an article with illustrations of "Pitkin's Excelsior Self-Adjusting Gate Latch," to which we invite the attention of the trade. The following handsome testimony to its practical working is furnished to us by J. Clark Wilson & Co., who are sole Agents for this Latch, which they quote to the trade at $3 per dozen, net:

Office of D. Laufman,
Dealer in Hardware, Iron, &c.,
Marion, Ind., March 1, 1876.

Messrs. Blount & Pitkin—Gentlemen: Your "Excelsior Gate Latch," I am glad to say, is a complete success, and is absolutely the only perfect Latch in the market. It really exceeds your representations, as I can testify from actual experience. Some four months since your Mr. Pitkin hung one of the Latches on one of the gates to our Court House Square, where nearly everything else had been tried and failed utterly in a very short time, because of the hard service, as the gate is opened probably 1500 times a day. When your Latch was first put on I fully expected it to give out as the others had, in two or three weeks, but such has not been the case. It works like a charm, and is to-day in as perfect condition and good working order as on the first day. I consider this the very hardest test it could be put to, as this gate does as much service in a month as an ordinary gate in a life time.

Judge Slack, of our Circuit Court, has directed that your latch be put on all the gates of the Court House Square as soon as the weather will permit, and we fully expect to have them on all the gates in our vicinity. I therefore take pleasure in recommending your "Excelsior Self-Adjusting Gate Latch" to the Hardware trade generally, as the very best latch that has ever been made, and one that they can confidently guarantee to their customers to give them perfect satisfaction.

Hoping you will meet with the success due to a really meritorious article that has long been needed by the trade, I remain, gentlemen, yours, respectfully, David Laufman.

The Nason Manufacturing Company will remove, on or about the 10th instant, to their new and commodious building, No. 71 Beekman and 71 Fulton streets, a few doors below their old corner.

The Blake Brothers' Hardware Company, New Haven, Conn., have issued an illustrated catalogue of Builders' and other Hardware of their manufacture. They invite the attention of the trade to their ornamental goods in Bronze Metal and Iron Bronzed—especially their new patented Cap Butts. These goods are very clearly illustrated with full size cuts, showing back and front view. The catalogue contains a large assortment of Butt Hinges, Store Door Handles, Latches, Axle, Awning, Frame, Side and Screw Pulleys, Barn Door Hangers and Rails, Furniture Casters, Hat and Coat Hooks, and miscellaneous goods. The book is handsomely printed on tinted paper, and is bound in a flexible cloth cover. The following discount sheet accompanies the book:

THE BLAKE BROTHERS' HARDWARE COMPANY—DISCOUNT SHEET.
Catalogue of 1876.

All our previous Lists, Discounts and Circulars are hereby annulled. Prices subject to change without notice.

New Haven, Conn., Jan. 15, 1876.

Page in Book.		Dis. per cent.
6,	Bronze Metal Cap Butts	50&10
7,	Bronzed " "	50&10
8,	Nickel Plated Cap Butts	50&10
9,	Bronzed Butts	65&10
10,	Loose Pin Acorn Butts, Plain	40&10
10,	" " " Japanned	50&10
10,	" " " Plated Acorn	45&10
11,	Narrow Fast Butts	25&10
11,	" " Japanned	25&10
12,	Inside Blind Hinges	40
12,	Back Flaps	40
12,	Pew Door Butts	40
13,	Broad Fast Butts	35&10
13,	" " Japanned	30&10
14-15,	" " Acorn, Japn'd or Plated	30&10
16,	Broad Loose Butts	45&10
16,	" " Japanned	45&10
17-18,	Broad Loose Butts, Acorn, Jap'd or Plt'd	45&10
19,	Brass Car Butts	20
20,	" " with Steel Washers	20
21,	" " Acorn Tips and Washers	20
22,	Thumb Latches, Heavy	40
22,	" " Light	20
23,	Bronze Store Door Handles, Nos. 8 and 9	40
23,	Bronze Metal " " Nos. 10 and 11	50
24,	Japanned Store Door Handles, Straight and Oblique	50
25,	Barn Door and Gate Latches	40
26,	Heavy Frame Pulleys	10
27,	Ornamental, Bronze Metal Face, Brass Wheel Axle Pulleys	20
27,	Ornamental Bronzed Face, Bronze Wheel Axle Pulleys	20
27,	Ornamental Bronzed Face, Brass Wheel Axle Pulleys	20
28,	Axle Pulleys	20
29,	Sham Axle Pulleys	40
30,	Tackle or Awning Pulleys	20
31,	Side Pulleys	10
31,	Frame Pulleys, Light	25
32,	Upright Pulleys	10
33,	Screw Pulleys	10
34,	Heavy Sash Rollers	20
34,	" Box	20
35,	Barn Door Hangers	30
35,	" " Rail	30
36-37,	Blake's Casters	40
38,	Long Wrought Pivot Casters	50
39,	Card Table Hinges	net
39,	Nut Crackers	50&5
40,	Carriage Knobs, Red and Green Label; Round and Screw Shanks	20
40,	Carriage Knobs, Brass and Silver Capped	10
41,	Coach Locks	20
41,	Carriage Spring Locks	20
42,	Wardrobe Hooks	30&10
43,	Coat and Hat "	40
44,	" " "	40
44,	Harness "	40
45,	Sash Cord Irons	10
45,	Door and Trunk Buttons	30
46,	Cupboard Knobs	20
46,	Drawer Pulls, Nos. 25 and 225	40
47,	" " Nos. 241, 242, 243	60&10
47,	" " Nos. 341, 342, 343	60&10
48,	Door Pulls	40
49,	Cupboard Catches	50
49,	Closet Catches	10
50,	" " Bronze Metal, No. 101	10
50,	" " Bronzed, No. 102	20
51,	Keg Truck	10
51,	Barrel "	10
52	Shelf Brackets, No. 30	60&10
52,	" " No. 40	60&10
52,	" " No. 50	60
52,	" " No. 60	60
53,	" " Nos. 1 and 2	Net
54,	Cork Screws, Nos. 1 and 2	10
55,	Ink Well Covers, Riveted	20
55,	" " Patented	30
55,	Key Escutcheons	60&10
56,	" "	50
57,	" "	50

J. Clark Wilson & Co. will issue this week the following discount sheet, to be applied to their illustrated catalogue and price list of 1874. They also issue, as an appendix to their catalogue, the revised list of the Nashua Lock Company's goods, which was established Dec. 7th, 1875, and an illustrated list of Brushes.

J. CLARK WILSON & CO.'S DISCOUNT SHEET, FEBRUARY 25, 1876.

Subject to Changes Without Notice.

Page in 1874 Catalogue.		Discount per cent.
2,	Snell's Boring Machines	25
2,	Extra Parts to Boring Machines	net
3,	"Phillip's" Boring Machines	25
4,	Snell's Car and Auger Bits	25
4,	Phœnix "	40
5,	Snell's Augers	25
6,	Gimlets, Taper Pod and Bits	20
	Change list of Countersunk Bits to $2·25 per doz.	
7,	Expansive Bits and Parts	15
8,	Bellows, new list of Sept., 1876.	
	Bellows, Common	15
	" Extra	net
	" Pittsburgh	net
	" Double Acting	net
	" Moulders'	20
	" Hand	10
	" Coopers'	net
9,	Anvils, Eagle, F. & N.	20

Nos.	00	0	1	2
Weighing, lbs.		10	15	20
Each	$2·50	3·20	3·75	4·50
Nos.	3	4	5	6
Weighing, lbs.	30	40	50	60
Each	$5·00	5·90	6·75	7·25
Nos.		7	8	9
Weighing, lbs.		70	80	90
Each		$8·10	9·00	9·50

All sizes weighing 100 lbs. and upward, $0·10 per lb.

10,	Vises F. & N.	15&10
11,	Standard Axes	net
11,	Double-Bitted Axes	15
11,	Handled Axes	net
11,	Spanish Axes	15
11,	Sledges, Smiths' Hammers, etc.	40
12,	Broad Axes, all Patterns	20
13,	Adzes	20
13,	Grub Hoes	20
13,	" " with Cutters	20
13,	Mattocks	20
14,	Picks	20
14,	Broad Hatchets	25
15,	Shingling, Claw and Lath Hatchets	25
15,	Boys' Axes and Hunters' Hatchets	25
17,	Mann's Axes	net
18,	H. Clark's Awls and Tools	50
	Packed in black walnut boxes, with slide covers, of ½ doz. each.	
18,	Saw Sets, Common Lever	net
18,	" Stillman's	10
18,	" " Pattern	20
	Stillman's Pattern Cross-Cut, $5·50 per doz.	20
	Aiken's Pattern	20
19,	L'Hommedieu Ship Augers and Bits	15
19,	Convex Nut Augers	40
19,	Metal Head Gimlets	25
20,	Socket Framing Chisels	60&10
20,	" " solid C. S. Bits	60&15
20,	" " solid C. S.	60&15
21,	" Corner Chisels	60&10
21,	Carpenter Slicks	60&10
21,	Socket Firmer Chisels, "Extra" 6 inch blades	60&10
22,	Socket Firmer Chisels, No. 1, 5 inch blades	60&10&5
22,	Socket Firmer Chisels, No. 2, 4½ inch blades	60&10&10
22,	Long Thin Paring Chisels	60&10
23,	Socket Firmer Gouges	60&10
23,	Drawing Knives	60&10
23,	Carriage Makers' Drawing Knives	60&10
23,	Shingle Knives	60&10
23,	Socket Scratch Awl	20
24,	Iron and Wool Inclinometers	40
24,	Plumb and Levels, Nos. 6 and 10	60&10
	Change list of Mahogany, No. 6 to $39·00.	
25,	Plumbs, Levels and Inclinometers	60&10
25,	Level and Plumb Glasses	60&10
26,	Iron Pocket Levels, Nos. 36 to 39 inclusive	25
26,	Iron Pocket Level, No. 37½	25
	Change list to $4.	
26,	Iron Block Plane, No. 43	20
	Change list of No. 43 to $1.	
27,	Improved Iron Bench Planes	20
28,	"Scioto" Bench Planes	50
28 to 39,	All Planes to No. 151 inclusive, except with English Irons, and Planes without irons; also, box, rose and apple wood Planes and Panel Plows of all kinds	35
28 to 39,	Box, rose and apple wood Planes, and Panel Plows of all kinds	30
29,	Planes with English Irons	net
30,	Planes without Irons	10
39,	Gauges	25
40,	Chisel and other Handles	25
	Change list of Handles as follows: Nos.... 163 163½ 164 166 167 170 / $5·50 4·00 15·00 4·75 4·00 3·75	
40,	Chalk Line Spools	25
41,	Common Auger Handles	25
41,	Patent "	net
41,	Cross Cut Saw, Plane and Hand Saw Handles	25
42,	Bench and Tail Screws	20
	Change list Tail Screws—186½, 2 in., $7·50; add 186½, 2½ in., $8.	
42,	Hand Screws	25
	Change list Hand Screws—186½ 187 187½ 188 / $2·00 2·25 3·25 4·75	
42,	Cabinet Clamps	25
43,	Mallets	20
	Change lists—A. B. C. D. E. F. G. / $1·20 2·00 2·50 1·00 2·50 3·00 3·50 / H. I. K. L. M. N. / $3·00 4·00 5·00 3·75 4·50 5·75	
43,	Rolling Pins, Mauls and Potato Mashers	10
43,	Saw Frames and Bucks	10
44,	Cooper's Wood Tools	25
44,	Truss Hoops, Nos. 1, 2 and 3	30
45,	Coopers' Edge Tools	20
46, 47,	Plane Irons	10
47,	Turning Saw Frames, and with Saws	20&10
37–49,	Boxwood Rules	60&10
50,	Ivory Rules	50&10
51,	Boxwood Calliper Rules	60&10
51,	Ivory "	50&10
51,	Miscellaneous Rules	50&10
52,	Marking, Mortise and Panel Gauges	45&10
52, 53,	Scholl's Patent Gauges	40&10
53,	Butler's "	40&10
53,	Try Squares	45&10
54,	Sliding T Bevels	45&10
54,	Screw Drivers	40
	Change list of 10 in. to $8·15; add 9 in. $6·95.	
54,	Sewing Machine Screw Drivers	net
54,	Base Knobs, Rubber Tipped. *B. W.*—2½ inch, $1·50; 3 inch, $5·00, per gross. *Birch.*—2½ inch, $4·25; 3 inch, $4·50, per gross	net
54,	Mahogany and End Rubber Tips	25
54,	Plain and Plush Tipped Base Knobs	10
55,	Coe's Genuine Wrenches	40&10
55,	Imitation, Coe's "	70
55,	Taft's "	70&10
	Make list of 8-inch bright, $12·00.	
55,	Baxter's Wrenches	20
56–62,	Change list of Miller's Pocket Knives as follows, viz:—Dis. 25 per cent.	

No.	Handle.	Lining.	Length of Handle.	No. of Blades.	Per doz.
91	Ebony	Iron	3½ in.	1	$3·00
92	Cocoa	"	3½ "	1	3·00
94	Bone	"	3½ "	1	3·50
229	Pearl	Brass	3 "	2	14·00
250	Ivory	"	3 "	2	10·50
259	Pearl	"	3 "	2	13·00
269	"	"	3½ "	2	14·00
315	Buffalo	"	3 "	3	11·50
316	Ivory	"	3 "	3	12·00
329	Pearl	"	3½ "	3	21·00
330	Ivory	"	3½ "	3	16·50
335	Buffalo	"	3½ "	3	15·50
339	Pearl	"	3½ "	3	20·00
340	Ivory	"	3 "	3	15·50
345	Buffalo	"	3 "	3	14·50
349	Pearl	"	3 "	3	19·00
350	Ivory, Oct.	"	3½ "	3	17·50
355	Buffalo, "	"	3½ "	3	16·50
359	Pearl "	"	3½ "	3	21·00
360	Ivory	"	2½ "	3	13·00
364	Shell	"	2½ "	3	14·50
369	Pearl	"	2½ "	3	15·50
374	Shell	"	3 "	3	19·00
379	Pearl	"	3 "	3	20·00
385	Buffalo	"	3½ "	3	14·00
395	"	"	3½ "	3	14·00
409	Pearl	"	3 "	4	21·00
439	"	"	3½ "	4	22·00
449	"	"	3 "	4	22·00
459	"	"	3½ "	4	23·00
474	Shell	"	2½ "	4	15·00

62,	Turner and Cowlishaw's Razors	5
	New numbers: "Centennial"—Nos 76 77 78 79 / Per doz. $6·50 5·50 9·00 9·00	
62,	Shears, Scissors, &c	70&10
63 to 66,	United States Steel Shear Co. Scissors, &c	20
66,	Hunt's Razor Strops	25&10
66,	Genuine Emerson Razor Strops	25
66,	Emerson "Souvenir" Razor Strops	net
67,	Files	20
69,	Stevens' Mitre Board, No. 2, with Gauges, $7	20
70,	Family Grindstones	20
70,	Framed "	20
71,	Cut Tacks—	
	½ weight American	75*
	½ " Swedes and Miners	65*
	Full " American	50*
	" " Swedes and Miners	30*
71,	Hungarian Nails	40*
71,	Tinned Tacks	30*
71,	Gimp and Lace Tacks, blued	10*
71,	Gimp and Lace Tacks, tinned	30*
71,	Brads and Patent Brads, full weight	net*
71,	Brads and Patent Brads, half weight	50*
72,	Copper Tacks. Change list to 45c. per lb.	net*
72,	Large Head Carpet Tacks, Swedes	10*
72,	Large Head Carpet Tacks, American Iron	10*
72,	Leathered Tacks	10*
72,	Cigar-box Nails	10*
72,	Chair Nails	net*
72,	Copper Nails. Change list to 45c. per lb.	net*
72,	Brush Tacks	net*
	Change list as follows: Inches.... 4-8 4½-8 ⅝ 5½-8 6-8 6½-8 / Per lb..... 60c. 48c. 40c. 34c. 30c. 27c. / Inches.... ⅞ 7½-8 8-8 1⅛ / Per lb. 24c. 22c. 20c. 19c.	
72,	Finishing Trunk and Clout Nails	net*
	Change List as follows: ⅜ ⅞ 1 1¼ inches and longer / 17c. 15c. 13c. 11c., per lb.	
72,	Tinned Trunk and Clout Nails	net*
73,	Looking Glass Tacks	net*
73,	Hame Nails	net*
73,	Fine 2d Nails	net*
73,	Barrel Nails	net*
73,	Basket Nails	net*
73,	Glazier's Points	20*
73,	Swedes Iron, Card, Upholsterers, Miners, Pail, Carpet, Felting and Coopers' Oval or Flathead, in bulk	net*
	Change List as follows: 6 8 10 12 14 oz. / 23c. 20c. 18c. 17c. 16c., per lb. / 16 18 20 22 24 oz. / 17c. 15c. 15c. 15c. 15c., per lb.	
73,	Tinned Tacks, in Bulk	net*
	Change List as follows: 6 8 10 12 14 oz. / 30c. 25c. 23c. 22c. 21c., per lb. / 16 18 20 22 24 oz. / 21c. 20c. 20c. 20c. 20c., per lb.	
74,	Gimp and Lace Tacks, in bulk	10*
	Change list, tinned: Ozs..... 1 1½ 2 2½ 3 4 6 8 / Per lb. $1·20 80c. 60c. 53c. 48c. 42c. 31c. 27c.	
74,	Brads and Patent Brads, in bulk	net*
74,	Shoe Nails	net*

Change list as follows:

	Per lb.
American Iron, 4-8 and larger	9c.
American Iron, 3½-8 and shorter	9½c.
Swedes Iron	13c.
Copper and Brass	45c.
Steel, all sizes	26c.
	Per M.
Steel, 4-8 inch and shorter	40c.
Hungarian, all sizes:	Per lb.
Swedes	16c.
Hungarian, all sizes, Charcoal	15c.
Hungarian, all sizes, American	13c.
Hob Nails, all sizes, best	15c.
Hob Nails, all sizes, American	12c.

74,	Miscellaneous Nails	net*
75,	Shoe Tacks	net*
75,	Channel Nails	net*
75,	Lining and Saddle Nails	20
75,	Coffin Lining Nails	33⅓*
	Change list—100 75 in a paper. / 6½ 5½c. per paper.	
75,	Heel and Toe Plates	net
76,	Steel Shanks	20
77,	Iron Screws. New list of Sept. 1, 1875	40
78,	Brass Screws. New list of Sept. 1, 1875	40
78,	Black and Tinned Iron Rivets	55
79,	Carriage Block and other Rivets	40
80,	Wellington Emery, 10c. lb	net
80,	Flour Emery, 8c. lb.	net
81,	Union Oil Stones and Hones, case 12 Stones	70
81,	" " " " 24 "	70
81,	" Oil Stone Holder	25

* Subject to 10 per cent. extra discount if paid within 30 days.

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81, "Eagle" Emery Cloth.....15
81, "B. and A." Sand Paper.....15
81, We have on hand a stock of "Diamond" Sand Paper, which we warrant equal to the best, at same list as B. and A.....15&5
82, Narrow Fast Cast Butts.....30*
Change list—
1 1¼ 1½ 1¾ 2 2¼
$0·45 ·48 ·50 ·55 ·60 ·65
2½ 2¾ 3 3¼ 3½ 3¾
$0·70 ·80 ·95 1·00 1·20 1·30
4 4½ 5 5½ 6
$1·40 1·90 2·30 2·90 3·50
82, Broad Fast Cast Butts.....40*
Per doz. pair—
2x2 2x2½ 2½x2½ 2½x2 2½x2½
$1·00 1·10 1·10 1·20 1·35
2½x3 2¾x2¾ 3x2½ 3¼x3¼ 3x3
$1·50 1·55 1·60 2·00 1·75
3½x3 3x3½ 3x4 3½x3½ 3½x4
$2·15 1·95 2·30 2·35 2·50
4x3 4x3½ 4x4 4x4½ 4x5
$2·50 2·70 2·90 3·22 4·00
4½x4 4½x4½ 4½x5 4x6 4½x6
$3·50 4·00 4·20 5·50 6·00
5x5 5x5½ 5½x5 5½x5½
$5·50 5·70 6·00 6·50
82, Mayer Hinges.....40*
Change List as follows:
0 1 2 3 4
Per doz..$1·50 1·60 1·90 2·20 2·75
5 6 12 14
Per doz..$3·20 4·25 2·20 2·75
Fast Joint.
0 1
Per doz..$1·50 1·60
83, Cast Narrow Butts, loose joints.....50*
Change List as follows:
2 2½ 3 3½ 4 4½ 5
$1·00 1·10 1·50 1·75 2·10 2·60 3·25
83, Cast Broad Butts.....50*
Change List as follows:
Per doz—
2x2 2½x2½ 2x2½ 2½x2
$1·00 1·10 1·10 1·20
2½x2½ 2½x3 3x2½ 3x3
$1·35 1·50 1·60 1·75
3x3½ 3x4 3½x3 3½x3½
$1 95 2·30 2·15 2·35
3½x4 4x3 4x3½ 4x4
$2·50 2·50 2·70 2·90
4x4½ 4x5 4½x4 4½x4½
$3·20 4·00 3·50 4·00
4½x5 5x4½ 4x6 5x5
$4·20 5·00 5·50 5·50
5x5½ 5½x5 5½x5½ 5½x6
$5·70 6·00 6·50 6·80
6x5½ 6x6 6x6½ 6x7
$7·10 7·60 7·80 8·50
6x8½
$11·00
83, Parliament Butts.....40*
Change list as follows—
Size when open 2½ 2¾ 3 3¼
Doz. pairs.....$1·00 1·00 1·20 1·30
Size when open 3½ 3¾ 4 4½
Doz. pairs....$1·45 1·60 1·90 2·00
Size when open 5 5½ 6 6½
Doz. pairs....$2·20 2·40 2·80 3·20
Size when open 7 7½ 8 9
Doz. pairs....$3·80 4·20 4·40 5·50
84, Loose Pin Acorn Butts.....45*
Change list as follows—
Plain.
2x2 2x2½ 2½x2 2½x2½ 2½x3
$1·00 1·10 1·20 1·35 1·50
3x2½ 3x3 3x3½ 3½x3 3½x3½
$1·60 1·75 1·95 2·15 2·35
3½x4 4x3½ 4x4 4x4½ 4½x4
$2·50 2·70 2·90 3·20 3·50
4½x4½ 4½x5 5x4½ 5x5 5x5½
$4·00 4·20 5·00 5·50 5·70
5½x5 5½x5½ 6x6
$6·00 6·50 7·60
84, Loose Pin Acorn Butts.....55*
Japanned.
Change list as follows:
2x2 2x2½ 2½x2 2½x2½ 2½x3
$2·50 2·65 2·80 3·00 3·15
3x2½ 3x3 3x3½ 3½x3 3½x3½
$3·30 3·50 3·65 3·80 4·00
3½x4 4x3½ 4x4 4x4½ 4½x4
$4·40 4·70 5·00 5·40 5·70
4½x4½ 4½x5 5x4½ 5x5 5x5½
$6·00 6·00 7·00 7·50 8·00
5½x5 5½x5½ 6x6
$8·50 9·00 11·00
84, Loose Pin Acorn Butts..... 50*
Japanned with Plated Acorns.
Change list as follows:
2½x2½ 3x2½ 3x3 3x3½ 3½x3
$6·20 6·40 6·50 7·00 7·50
3½x3½ 3½x4 4x3½ 4x4 4x4½
$8·00 8·40 8·80 9·20 9·50
4½x4 4½x4½ 4½x5 5x4½ 5x5
$9·70 10·00 10·80 11·60 12·50
5x5½ 5½x5 5½x5½ 6x6
$13·00 13·50 14·00 16·00
85, Wrought Brass Butts.....30
85, Cotton Chalk and Fish Lines.....50
85, Family Soldering Irons.....void
86, Cheese and Butter Tryers.....20
87, Flour and Coffee Tryers.....20
87, Door Springs.....20
87, Carpet Stretchers.....20
88, Spoke and Cooper Shaves.....20
88, Coopers' Boring Machines.....20
88, Horse Shoe Saw Sets.....20
88, Pruning and Sheep Toe Shears.....20
88, Pruning Saw with Chisel.....20
89, " " " Hook.....20
89, Edging Knives.....20
89, Weeding Forks.....25
90, Garden Reels.....20
90, Boys' Sets Garden Tools.....20
Add New No. 82. Three pieces. Spade, Fork and Hoe, and Rake. Steel Spade and Malleable Fork and Rake (lighter than No. 84), $18 per dozen sets.....20
90, Shuffle Hoes.....20
Add New No. 93. Socket Shuffle Hoe, Concave Blade—
Inch..... 6 7 8 10
Per doz.....$7·50 8·00 8·50 9·50..20
91, Floor Scrapers.....20
91, Garden Hoes and Rakes.....20
92, Lothrop's Trowels.....10
93, " Garden Trowels.....25
93, " " Forks.....25
93, Ames' Shoe Knives.....15
93, " Skivers.....15
93, " Bread and Kitchen Knives.....15
93, Lothrop's Mincing Knives.....10
94, Smith's Patent Mincers.....16⅔
94, Messenger Can Openers.....net
95, Sad Irons.....25
95, Tailors' Geese.....net
95, Gleason's Shield Sad Irons.....5
95, Polishing Irons.....net
95, Toilet Irons.....5
96, Self-heating Tailors' Irons.....5
96, " Smoothing Irons.....5
96, Mrs. Cook's Polishing Irons.....net
96, Keystone ".....10
97, Burlingame Horse Hopples.....10
97, Horse Hopples.....10
97, Bay State Coring, Paring, and Slicing Machine.....10
97, Bay State Peach Parer.....10
97, Skeleton Parer, Corer, and Slicer.....10
98, Improved Union Apple Parer, $7·75 per doz..net
98, Whittemore Nut Crack.....20
98, Meat Cutters.....10
99-122, Sherwood's Wire Goods.....10
122, Mrs. Cole's Fluting Machines.....15
123, Mrs. Cole's Pony Fluting Machines.....10
124, C. S. Dividers.....35&10
123, C. S. Compasses.....35&10
124, C. S. Wing and Double Callipers.....35&10
124, C. S. In and Out Callipers.....20
125, Rotary Hammer Saw Sets.....20
125, Spring and New Pattern Hammer Saw Sets..20
126, New Pattern Lever and Lever Saw Sets.....20
126, Plate Saw Sets.....20
126, Timber Scribes.....20
126, Spring Punches.....20
127, Stocks and Dies.....5&10
127, Taper Taps.....5&10
128, Hand Bells.....70&10
128, Milkmen's and Auctioneers' Bells.....net
128, Barton Gongs.....35
128, Alarm Door Bells.....25
128, House Bells.....25
129, Cow Bells.....50&10*
Change Lists as follows:
Common.
0 1 2 3 4
Per doz..$2·15 2·50 3·20 3·85 4·40
5 6 7 8
Per doz..$5·60 6·40 7·20 8·00
Make void 9, 10, 11, 12.
Western.
1 2 3 4 5
Per doz..$12·80 9·50 8·00 6·40 5·60

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6 7 8 9
Per doz..$4·80 4·00 3·20 2·80
Make void 10, 12, 14, 16.
Kentucky.
7 6 5 4 3
Per doz..$3·60 4·40 5·60 7·20 8·00
2 1 0
Per doz..$10·00 12·75 15·25
Make void 2 | 0.
129, Cow Bell Straps.....net
129, Sheep Bells.....20
129, Sheep Bell Straps.....net
129, Shaft and Pole Chimes.....25
130, Round and Open Sleigh Bells.....25
130, Body Straps.....25
130, Neck Straps.....25
132 to 135, Chase's Neck and Body Straps.....25
137, Taylor's Bells.....25&10
139, " ".....25&10
140 to 141, Taylor's Western Gong Bells.....25&10
143, Taylor's Western Gong Bells, No. 320 to 545 inclusive.....net
143, Taylor's Bells, No. 620 to 745 inclusive..25&10
144, " Russian Sleigh Bells.....25
145, " " " ".....25
146, " Patent Shaft Bells.....20
147, " Swiss Hand Bells.....25
148, Weed's Self-Boring Molasses Gates.....15
148, " Composition Faucets.....add 10
149, Brady Lanterns.....10&10
121, Ætna ".....10&10
152, De Beque ".....10&10
152, Yankee ".....10&10
155, "Star Tumbler" Lanterns, less than 25 doz.net
25 doz.....10
50 doz.....15
100 doz.....20
156, Hitching Rods.....net
157, Chain Door Fasteners.....20*
158, " " ".....20*
159-298, Nashua Lock Company's Locks, Knobs, Keys, Escutcheons, etc.
(See new list prices of December 1, 1875, attached to this discount sheet.)
Nashua Lock Company's Locks, Knobs, Escutcheons and other goods, from page 159 to 298 inclusive, discount 40 and 5 from revised list of Dec. 7, 1875, subject to 2 per cent. extra if paid within 30 days.
298, Tobacco Cutters, per dozen, $18.....50
311-318, B and D Locks and Latches, Padlocks, etc.....20
319-321, Trunk Locks.....25
321-332, Eagle. Chest, Desk Box, etc., etc., Locks.25
332, Eagle Lock Keys.....net
333, Plate Casters, "Toler's," except Porcelain Wheels.....40
333, Shallow Socket Casters, except Porcelain Wheels.....40
333, Porcelain Plate Casters.....50
334, Deep Socket Casters.....40
334, Bed Casters, except Porcelain Wheels.....40
334, " with ".....50
335, " Globe, with ".....33⅓
335, Bracket Bed Casters.....33⅓
335, Truck Casters.....33⅓
335, Iron Furniture.....30&10
335, Piano Casters.....33⅓
335, Extension Casters.....30&10
336, Ford's Casters.....25
337, Gross' Casters.....25
338, Door and Gate Springs; also, Challenge at same price.....10
Change list—
Japanned.....$2·50 ...10
Coppered.....4·50 ...10
Plated.....6·00 ...10
338, Torrey's Door Springs.....60, 10&10
338, Rubber " and Bands.....10
339, "Anti-Friction" Barn Door Hangers.....35
340, R. & C. Barn Door Hangers.....40&10
341-347, Middleboro' Shovels, Spades.....20
348, " Scoops.....20&5
348, Ames' Shovels and Spades.....20
Change list—
341, Lane's L. H., Rd. Pt. Shovels, No. 3, to $14·50.....20

	No. 2.	No. 3.	No. 4.	
343, "Sherman's" Pol'd L. H. Rd. Pt. Shovels, to.	$15·50	$16·00	....	20
343, "Middleboro" L. & D. H. Sq. Pt. Shovels, to.	12 00	12·50	14·30	20
343, "Middleboro" L. H. Rd. Pt. Shovels, to.	11·50	12·00	13·50	20
343, "Middleboro D. H. Rd. Pt. Shovels, to.	12·50	13 00	14·50	20
343, "Sherman's" Black L. H., R. Pt. Shovels, to.	14·50	15·0	16·00	20
343, "Sherman's" Bl'k Railroad Shovels, to	17·00	17·50	18·50	20
343, "Middleboro" D. H. & L. H. Sq. Pt. Shovels, to.	11·00	11·50	....	20
343, "Middleboro" L. H. Rd. Pt. Shovels, to.	10·50	11·00	12·25	20
343, "Middleboro" D. H. Rd. Pt. Shovels, to.	11·50	12·00	....	20

Make list:
344, "Sherman's" B. S. D. H. Sq. Pt. Shovels, No. 6. $19·75.....20
344, "Middleboro" Plain D. H. Rd. Pt. Shovels, No. 6, $15·75; No. 7, $17.....20
346, Make Molders' Shovels read "Plain Back, Solid C. S.".....20
In place of N. B. Sherman read "Middleboro," and change list to $17.....20
In place of C. B. Lane read "Scudder," and change list to $15.....20
Change list of Richardson's to $14.....20
346, Add to Boys' Shovels and Spades "Carr's" Iron Pol'd to $6.....20
347, "Unpolished Spades," 50c. less per doz., should read Unpolished C. S. and Polished Steel Spades, 50c. less per doz. And add Unpolished Iron Spades $1 less per doz.....20

Change Lists of—	No. 2.	No. 3.	No. 4.	
347, N. B. Sherman D. and L. H'dle Pol'd Spades to	$17·00	$17·25	$18·50	20
347, "Middleboro" D. and L. H'dle Pol'd Spades to	12·50	13·00	14·00	20
377, "Sherman's" D. and L. H'dle Black Spades to.	16·00	16·25	17·00	20
477, "Middleboro" D. and L. H'd'e Black Spades to.	11·50	12·00	13·00	20

347, Sherman's Subsoil Spades to $19·50.....20
347, " Post " to $16·50.....20
Black Ditching, Sub oil and Post Spades $1 less per dozen.....20
348, Richardson's *Galvanized* Scoops should read $2 per doz. advance, over *full* polished...20&5
348, Carr's Furnace Scoops. Make list $8.75 per dozen.....20&5
349, Scythe Snaths.....25
349, Grain Cradles.....20
349, Cradle Fingers.....net
350-351, Scythes.....25
352, Bush Scythes, Hay and Straw Knives.....25
352, Grass Hooks, Nos. 1, 2, 3, 4.....20
352, Grass Hooks, R. & M.....10
352, Corn Knives, No. 1.....25
352, Elbow Corn Cutters.....50
352, Scythe Stones. Change list of Nova Scotia to $7·50.....10
352, Scythe Rifles. Change list of Schoonovers to $8.....10
353, Manure, Hay and Spading Forks.....30
353, Potato Hooks.....30
354, Hoes.....30
354, C S. Rakes.....30
354, Malleable Rakes. Change list of 11 tooth to $3·50.....40
354, Wood-Head Rakes.....40
355, Handles.....10
354, Moore's Floral Tools.....20
355, Floral Tools in Sets.....40
355, Hoe and Rake.....40
356, Steelyards.....net
356-357, Spring Balances and Bow Scales.....35
357, Beam Balances.....33⅓
357, Platform Scales.....33⅓
357, Hatch's Tea and Counter Scales.....25
358-359, Wood's Cutlery Company, Knives, &c...10
359, Wood's Butcher Knives, No. 45 to 48, inclusive.....33⅓
359, Wood's Butcher Knives, No. 49 to 55, inclusive.....10
360, Wood's Skinning and Sticking Knives.....33⅓
Wood's Round Handle Butcher Knives.....20
360, Other Knives.....10
360, Beatty's Cleavers and Choppers.....20
361-366, Eddy's Taps.....20
366, Glass Curtain Pins.....50&10
367, Thermometers, Tin Case, Dairy, Metal, Wood Case.....50&10
367, Black Walnut or Cabinet Case, should read "oiled" *not* "old" and Fancy Thermometers
368, Trace Chains.....
368, Breast ".....
368, Heel ".....
369, Lead Traces.....
369, Breeching Chain.....
369, Back Cart ".....
369, Coil and Best Crane Chain.....
369, Twisted, Link and Cemetery Chain.....
(Market prices.)
370, Wagon Chain.....75
370, Ox or Log Chain.....75
370, Ox and Cow Ties.....75
370, Mining Traces.....75

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370, Wrought Staples.....75
371, Hooks and Staples.....75
371, Hasps and Staples.....75
371, Awning Hooks.....75
371, Tinned Meat Hooks.....75
372, Trap Door Rings and Staples.....75
372, Wrought Rings.....75
372, " S Hooks.....75
372, " Horse Hooks..... 65&10
372, Hitching Rings..... Short list
372, Hinge Rivets.....75
373, Strap and T Hinges.....50&10
373, Narrow Fast Wrought Butts.....30&5
373, Broad " ".....35&5
374, Table Butts, Back Flaps and Inside Blind Butts.....30&5
374, Providence Hinges.....40
374, Heavy Welded Hook Hinges.....40
374, Washburn's Patent Blind Hinges.....10
374, Van Sand's Patent Screw Blind Fasts.....5
374, Clark's Blind Hinges.....65*
374, Parker's ".....65*
375, State Gate Hinges.....60&10*
375, New England Gate Hinges.....60&10*
375, Spiral Spring Gate Latches.....60&10*
375, Automatic Gate Hinges and Latches.....net
375, Leed's Gate Hinges and Fasts.....net
375, Clark's Improved Gate Hinges.....25
375, Clark's Gate Latches.....15
376, Hat and Coat, and Wardrobe Hooks.....60&10*
Change list of Hat and Coat Hooks:
No. 1 2 3 34 7 7½
$3·00 3·70 5·25 5·75 3·60 5·40
No.. 8 38 48 53 54
$3·00 5·85 7·00 2·80 3·20
376, Hotel or School-House Hooks.....60&10*
376, Harness Hooks.....60&5*
376, Clothes Line Hooks.....60&10*
376, Brass Knob Barrel Bolts.....60*
376, Bronzed Iron Barrel Bolts.....60&10*
376, Square Door Bolts.....60*
377, " Cased Bronzed Iron Bolts.....60&10*
377, " Neck Bolts.....60*
377, Flat Shutter ".....60*
377, Chain ".....60&10*
377, Square Cased Bronzed Chain Bolts.....60&10*
377, Spring Foot Bolts.....65*
377, Thumb Latches, Blake's Pattern.....60*
377, Roggen's Latches.....65*
377, Barn Door ".....60&10*
377, Store Door Handles, No. 6.....65&10*
377, " " Nos. 16, 26.....60&10*
378, Door Buttons, Japanned.....60*
378, " " Brass.....60*
378, Drawer Pulls, except Nos. 1 and 200.....60*
378, " " Nos. 1 and 200.....60&10*
378, Wrought Chest Handles.....60*
378, Surface " ".....65&10*
378, Flush " ".....60&10*
378, Screw Pulleys.....60*
378, Side ".....60*
378, Clothes Line Pulleys.....60*
379, Tackle Pulleys.....60*
379, Hot House ".....60*
379, Usual Axle ".....20*
379, Judd's " ".....10
379, Blake's Axle and Sham Axle Pulley.....10
379, Frame Pulleys.....60*
379, Well Wheels.....60*
380, Barn Door Hangers.....60&10*
380, Check Back ".....60&10*
380, Barn Door Rollers.....60&10*
380, " Rail.....60&10*
380, Iron Bench Screws.....60&10*
380, Keystone Grindstone Fixtures.....65%*
381, Grindstone Fixtures.....15
381, " with Flange.....15
381, Lemon Squeezers.....10
381, Blake's Nut Cracks.....50
381, Roller Ends.....50&15*
381, Shade Brackets.....60&10*
381, Rack Pulleys.....net
Change list—
No..... 100 120 125 160 165
$3·50 6·00 5·75 7·60 8·00
382, Sash Fasts, Judd's.....20&10&10
382, Window Spring Bolts, "Judd's".....60*
382, Wrought " " ".....20*
382, Sash Cord Irons.....60*
382, Tack Hammers.....net
382, Magnetic Tack Hammers.....25*
382, Upholsterers' and Saddlers' Hammers.....10
382, Tack Claws.....25
383, Maydole's Hammers.....12
383, Cheeny Hammers.....5
Change list:
Nos..... 21 22 23 30 31 32 7
$4·15 3 35 3·00 7·35 6·50 6·30 9·05
384, "H. Clark" Nail Hammers.....25&10
384, Add J. C. Wilson Solid S. C. Adze Eye Hammers.....20
Nos..... 1 1½ 2
$11·25 10·00 8·50
384, "H. Clark" Rivetting and Engineer Hammer.....40
384, Barber's Braces.....40&5
385, Bartholomew Braces.....40&5
385, American Ball Braces.....25
385, Spofford's Braces.....50
385, Steel and Iron Squares.....50
By the case.....50&10
386, Spokeshaves, Iron.....40
386, Spoke Trimmers, Bonney's and Stearns'.....25
386, Hollow Augers.....33⅓
386, Bonney's and Stearns' Hollow Augers.....25
386, Jennings' Auger Bits.....10
386, Andrews' ".....40&10
386, Cook's ".....40&10
Change 4-16th to $1·50.
387, Disston's Saws.....15
389, Cabinet Scrapers.....15
389 to 391, W. M. & C. Saws.....15
391, "Tennis" Hand Saws.....10
391, Champion Cross-Cut Saws, 45c. per foot.....net
391, Boynton's Lightning Cross-Cut Saws, 50c. per foot.....net
391, Common Cross-Cut Saws, 40c. per foot.....net
392, Livingston Wood Saws.....10
392, "Tennis" " White Frame, $7; Red Frame. $8.....10
392, Saw Frames.....10
392, " Bucks.....10
392, Wilson's Coffee Mills.....20
392, 393, Parker's " ".....20
393, Enameled Kettles.....40
393, Saucepans and Glue Pots.....30
393, "Eureka" Family Glue Pots.....25
393, Brass Kettles, 45c. per lb.....net
393, Copper Rivets and Burs.....20
Change list: No. 14, 65c.; No. 15, 70c.
393, Copper and Brass Wire.....10
Change list Brass Wire:
0 to 20 21, 22, 23 24, 25
33c. 34c. 35c.
Copper Wire:
0 to 20 21, 22, 23 24, 25
43c. 44c. 45c.
394, Belt Hooks.....60
394, Blake's Belt Studs.....20
394, Iron Wire.....market prices
394, Fence Staples.....market prices
394, Boardman's Blind Staples.....net
394, Sash Cord; Nos. 0, 00, 1, 2 and com.....10
" Nos. 3, 4, 5, 6. 7.....net
394½, Wire Cloth.....net
395, Judd's Tinned Harness Snaps.....25
395, Hull's Japanned Harness Snaps.....50*
395, Cattle Ties.....50*
395, Bull Rings.....60*
395, Welton's Cattle Leaders.....60*
395, Ox Bow Pins.....50&10*
396, Ox Balls.....60*
396, Fitch's Curry Combs.....25*
Change list—No. 240, $1·00
397, Hotchkiss' Curry Combs.....35*
397, Rubber ".....10
397, Horse Cards.....30*
397, Cotton ".....10*
398, Wool ".....15*
398, Jim Crow Cards.....15*
398, Carpenters' Chalk.....10*
398, Chalk Crayons.....10*
398, Dixon's Lead Pencils.....10
398, Rope's Carpenter Pencils.....30&10
398, "Copenhagen" Carpenter Pencils.....10
398, Dixon's Lumber Pencils.....net
398, Oneida Traps.....25
398, P. S. & W. Imitation Traps.....35
399, Wood Mouse Traps.....50*
399, Round and Square Wire Mouse Traps.....net
399, Squirrel Cage Mouse Traps.....10
399, Round and Square Wire Rat Traps.....net
399, Collier's Square Tinned Wire Mouse Traps..10
399, Ox Muzzles.....20
399, Iron and Tinned Wire Sieves.....10
399, Corn Poppers.....net
400, Tinned Wire Broilers.....10
400, Round Wire Dish Covers.....net
400, Skimmers.....net
400, Toasting Forks.....net
400, Egg Beaters—Spoon.....net
400, Monroe's Egg Beaters.....5
400, Dover ".....$4·50, net
400, "Peerless" ".....10
400, Mackey's ".....20
400, "Centripetal" Egg Beaters.....5
400, Handles.....10
401, Hammer and Hatchet Handles.....10

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401, Ice Picks, Nos. 1 and 10.....60*
401, White's Ice Picks.....net
401, Dunlap's Ice Picks.....net
401, Ice Axes.....50*
401, Plumbs and Levels.....60&10
402, Plumbs and Levels.....60&10
403, Pocket ".....50&10
403, Lathrop's Trammel Points.....25
403, Oil Stones, Washita.....net
Change list—
No..... 1 2
30c. 25c.
Slips. Ax Stone.
60c. 22c.
403, Hindostan Stone.....20*
Change list Ax Stone to 8c.
403, Arkansas and Turkey Stone.....net
Change list Oil Stone, $1·35; Slips, $2·50.
403, Sand Stone.....15
404, White Lead.....net
404, Slates.....60&10
404, Slate Pencils, Common.....net
404, Soapstone Pencils.....10
404, Awls.....20
404, Pinking Irons.....20&10
404, Cigar Box Openers.....net
404, Sardine Knives.....20
404, Sardine Scissors.....20
405, "Eureka" Can Openers.....50
405, Miles Meat Cutters.....30
405, Hale's ".....35
406, Stow's Stuffers.....5
406, Steak Hammers and Ice Picks.....25*
406, Oyster Knives.....15
406, Fluting Scissors.....20&10
406, Curling Tongs.....20
406, " Irons.....50
406, Ship Scrapers.....net
406½, Giant Nail Pullers.....net
406½, National Ice Chisel.....10
406½, Novelty Ice Breaker.....net
406½, Metal Key Faucets.....10
407, Box Scrapers.....20&10
407, Box Chisels.....30
407, Cotton Hooks.....20
407, Hay Hooks.....20
407, Sheep Shears.....25
407, Pruning Shears, "Conn. Cutlery Co.".....40
407, Lamp Trimmers.....10
407, Cork Lined Faucets.....60*
407, Fenn's Faucets.....50
408, " Cork Stops.....40
408, Star Faucets.....60
408, Petroleum Faucets.....15&10
408, Stebbins' Molasses Gates.....62½*
408, Lincoln's ".....50*
408, Self-Measuring ".....20
408, Brass Racking Cocks.....40
408, " Lever Bibs.....40
408, " Globe Cocks.....40
409, Chase's Oilers.....40
409, Broughton's Oilers.....25*
409, Olmsted's ".....25*
409, Malleable Oilers.....10
410, Stair Rods and Fasts.....40
410, Plated Spoons and Forks.....40
411, German Silver Spoons.....30
411, Britannia Spoons.....50&10
412, Iron Tea and Table Spoons.....10
By the case.....20
412, Basting Spoons.....10
412, Preserve Spoons.....10
412, Galvanized Clothes Line Wire.....25
412, Common Clothes Pins.....net
412, Smith's ".....10
412, Coal Hods.....50
413, "Morning Glory" Coal Hods.....50
413, Coal Shovels.....10
413, Stove Cover Lifters.....10
413, "Always Cool" Cover Lifters.....10
413, Dixon's Stove Polish, $6·00.....net
413, "Black Diamond" Stove Polish.....10
413, "Gem" Stove Polish.....20
413, Porcelain Head Picture Nails.....20&10
413, Brass Head Picture Nails.....60*
414, Horse Nails.....net
Ausable Nails, in lots of 1000 lbs.....5
Make list of Blued same as Polished.
Clinton Nails, in lots of 1000 lbs.....
Buffalo Forged Nails, in lots of 1000 lbs.....
Union Nails, in lots of 1000 lbs.....
Brundage Nails, in lots of 500 lbs.....5
Putnam Nails, in lots of 2000 lbs.....5
Vulcan Nails, in lots of 500 lbs.....5
Vulcan Nails, in lots of 1000 lbs.....7½
Reduce list 2c. per lb.
Eureka Nails, in lots of 1000 lbs.....5
Globe Nails, in lots of 1000 lbs.....5
414, Toe Calks.....net
414, Horse and Mule Shoes.....market prices
415, Borax.....market prices
415, Tuyere Irons.....10
415, B. S. Tongs.....40
415, Horse Shoeing Pincers.....30&10
415, B. S. Butteris' ".....30&10
416, Common Carriage and Tire Bolts.....75
417, Philadelphia Carriage and Tire Bolts.....60
417, Stove Bolts.....20
418, Hand Rail Screws.....33⅓
418, Bright Wire Goods.....65&10*
419, Iron Jack Chain.....50*
419, Brass ".....40*
419, Bright Coil and Halter Chain.....20
419, Galvanized Pump Chain.....10
419, Parallel Bench Vises.....30
420, Solid Box Vises.....20
421, Breast Drills.....10
421, Ratchet Drills.....30
421, Plyers and Pincers.....net
421, Button's Patent Wire Plyers.....33⅓
422, Jail Padlocks.....33⅓*
422, Tolner's Acorn Padlocks.....20
422, Romer's Brass ".....10
423, M. W. & Co.'s Wrought Iron Tumbler Padlocks. Wrought Iron Shackles and Bolts. Warranted in all respects.....40
423, Padlock Keys.....40
424, Cartridges.....50&10
424, Disston's Trowels.....15
424, Bisbee's Brick Trowels.....10
425, " Trowels.....10
425, Leach's Saw Sets.....15
425, " Wire Cutters.....15
426, Shelf Brackets.....33⅓
426, Clock Shelf.....33⅓
427, Drawer Pulls.....33⅓
427, Cage Hook.....33⅓
427, Ceiling Hook.....33⅓
427, Hand Clamp.....33⅓
428, Garden Engine.....net
429, Croquet.....40
430, Radial Steels.....net
431, " ".....net

BRITISH IRON MARKET.

(*Specially reported by cable for The Iron Age.*)

WEDNESDAY, March 8, 1876.

Scotch Pig.—There is an improvement in the demand, and a fair business has been done. Prices are steady. The following are makers' quotations:

Coltness No. 1.....72/6
Gartsherrie No. 1.....70/6
Glengarnock No. 1.....67/
Eglinton No. 1.....60/6

Manufactured Iron and Rails are without change to report.

IRON.

American Pig.—There is even more dullness than there has been in the Iron market, and sales are becoming smaller and inquiry less. There is, however, no change in quotations. Transactions are confined to small lots for current needs. We note the sale of 200 tons White Iron at $15·50 here. We quote as before: No. 1 Foundry, $23; No. 2 Foundry, $21; Gray Forge, $20.

Scotch Pig.—The market is in almost the same condition as at our last writing. Prices are without change. The sales include 200 tons Glengarnock and 100 tons Eglinton on private terms. We quote Coltness, $32 @ $33; Glengarnock, $30 @ $31; Gartsherrie, $32·50; Eglinton, $29 @ $30.

Rails.—While we hear of no transactions, there is considerable inquiry, particularly for Steel, which we still quote $65 at tidewater, for Eastern, and $60 at mill for Western. Iron are $42 @ $46 at mill, according to quality and location.

Old Rails.—In the absence of any authenticated reports of sales we prefer to refrain from quotations, which must necessarily be entirely nominal.

Scrap.—Holders are firm at $32, with small stock and little demand.

METALS.

Copper.—Sales of Lake Superior Copper for the week sum up 500,000 pounds at 22⅛c. @ 22½c., the market closing quiet, but firm, at 22¼c. We quote Baltimore nominally 22¼c. Manufacturers, as a whole, carry but moderate stocks, but the present low figure seems to be no inducement for them to anticipate wants; this being the case, we shall have to wait patiently for the period when larger sales of their manufactures shall compel them to stock up with the raw material. The continual decline in Europe has deeper and more general causes. We have been shown a private telegram to one of the East India houses here, from London, dated Monday, which expresses itself as follows: "A feeling of uneasiness prevails in commercial circles in this city, and values of goods are falling." The fact is, that for the past twelve months there have been almost daily failures of note, either in London or at Liverpool, in every imaginable branch of trade, and confidence is greatly impaired thereby. The cause of these uninterrupted disasters has to be principally searched for in the credit facilities which these English and German houses have had at their bidding in amounts out of proportion large, when compared with their capital. While everything was rising, these people were able to launch out with impunity, but now that "hard pan" is being reached in Europe and elsewhere, large dealings involve correspondingly heavy losses, and these speculative concerns are driven to the wall. Copper having been one of their favorite articles, now feels the effect of it, and this to some extent explains the gradual decline in Chili Bars, which have fallen to £76, while Best Selected has dropped to £85. The manufactures of Copper are quiet but firm. New Sheathing is steady at 31c. for over 12 ounce; Bolts and Braziers, 32c.; Bronze and Yellow Metal Sheathing, 20c., and Y. M. Bolts, 28c.

Tin.—A well concerted movement to precipitate a further decline in Tin seems to have been made simultaneously at London and New York, and success has attended these operations. But the drop has been too sudden, from all appearances, and there seems room for a decent recoil. At all events the regular dealers should guard against being frightened into taking too hopeless a view of the immediate future of Tin. A decline of £8 per ton since January 1, or about 10 per cent., seems too rapid a depreciation, the more so as we are not remote from the point beneath which production will have to stop in the Straits settlements, if not in Australia. The latest telegrams quote Straits, at London, £73, which is a recovery of 10/, while at Singapore it continues to fluctuate between $21·12½ and $21·25. A year ago we were told from Singapore that the cost of production there is $21 per picul. The statistical developments in February have been partially unfavorable and partially the reverse. The arrivals at London, we are told per cable, were 3000 tons; the shipments from the Straits were 700 to England, and 200 to this country; the deliveries in England and Holland were 2000 tons. The Australian shipments to England were but 400 tons, a decrease for the month of 500 tons. We are now approaching the time when the latter will continue on the wane; if, then, those from the Straits also fall off by reason of the drop in values, a healthy reaction may be at hand, provided consumption takes Tin freely. Extensive dealings are reported in Straits Tin at this point at irregular figures, as low as 16½c., gold, but we quote moderate sized lots 17c. @ 17¼c., gold. English Refined and Common cannot be quoted. Banca we call 21¾c. @ 22c., gold. The Dutch Trading Society will sell 24,800 slabs Banca on the 28th instant. Tin Plates are extremely quiet; we quote, in gold, per box, large lines, ordinary brands, as follows: Charcoal Bright, $7·87½ @ $7·50; ditto Ternes, $6·87½ @ $7; Coke Tin, $6·37½ @ $6·62½; and ditto Ternes, $6 @ $6·25. No change in England, where they are working off old contracts.

Lead.—There have been sold but about 50 tons Common Domestic, at 6⅛c., gold, at which the market shows a tolerable degree of firmness, but lacks animation, the building trade not promising great things for the spring season now drawing near. Of Ordinary Missouri, 70 tons sold at 7·04c., currency, delivered here; soft, ditto, commands 7·54c. @ 7·58c., currency, here, and Select 7·75c., currency. Of Common Foreign, 150 tons sold at 6⅞c. @ 7c., gold. Lead was not very firm in England, the exchange at Hong Kong being unfavorable to shipments to China, while the countries in the extreme North of Europe were still under ice blocade; the Continent itself is firm. The manufactures of Lead are in steady request. Bar is still quoted 9c., but Pipe has been advanced to 9½, and Sheet to 10c., usual discount to the trade.

Spelter and Zinc.—Domestic Spelter has given signs of greater liveliness, and 7¾c., currency, cash, has been paid for a good round lot, the prospect being that on the 10th instant the combined producers will raise the price to 8c., currency, a measure which has been foreshadowed for about a fortnight past. Foreign Spelter being virtually superseded in the American market, the producers have it all their own way, an advantage which nobody will grudge them after the experience they have gone through. Of Foreign, the trifle W. H., still unsold, is held at 7¾c., gold. In England the usual demand for the spring trade was tardy in manifesting itself, and was filled from Domestic sources of inferior Spelter. The Continent remains stiff, with little available metal to be had. Sheet Zinc will soon begin to

move, and we quote the same firm at 8⅝c. @ 8¾c., gold; No. 8 ⅛c. above this quotation.

Antimony.—London has recommenced to look up, and we are quite firm here at 14¾c. @ 15c., gold, some larger parcels now bringing the outside figure.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending March 7, 1876:

Hardware.

Alloch, Laight & Co.
Cases, 7
Boker Hermann & Co.
Packages, 4
Arms, cs., 9
Mdse. pkgs., 8
Crossman W. H. & Bro.
Cases, 2
Copeam W. C. & Co.
Cutlery, cs., 1
Calhoun, Robbins & Co.
Packages, 5
Furness, Bannister & Co.
Packages, 2
Field A. & Co.
Chain and hardware, pkgs., 66
Packages, 12
Anvils, 100
Casks, 1
Chains, cks., 88
Harris J. E.
Cases, 2
Lau & Garlichs.
Mdse. pkgs., 2
Lennox E. S. & Co.
Bale ties, lots, 186
Moulson J.
Casks, 3
Markt & Co.
Whetstones, cs., 33
Michelena S.
Remington rifles, bxs., 5
Peters Bros.
Mdse. pkgs., 5
Spies, Kissam & Co.
Mdse. pkgs., 6
Sanders Walter,
Packages, 6
Schuyler, Hartley & Graham,
Cases, 1
Schoverling & Daly,
Arms, cs., 7
Mdse. pkgs., 3
Star Union Line,
Cases, 2
Seaman A. H.
Packages, 3
Twaiter & Co.
Cases, 1
Tillotson L. G. & Co.
Wire, lots, 207
Van Wart & McCoy,
Mdse. pkgs., 16
Wiebusch & Hilger Mfg. Co.
Iron ware, cks., 8
Mdse. pkgs., 13
Chain, cutlery, etc., pkgs., 34
Wetzler M.
Ironware, cs., 8
Wallach A. & E.
Cases, 1
Windmuller L. & Roelker
Cases, 4
Ward A.
Mdse. pkgs., 1
Order.
Casks, 13
Files, cks., 1

Iron.

Champion H.
Cast, kilos., 97,790
Heurmann E.
Cases, 80
Mitander Nils,
Bars, 740
Naylor & Co.
Bars, 1480
Roniger, Kiernan & Co.
Ironwork, pkgs., 6
Sampson G. G.
Pig, tons, 200
Weston M.
Ironwork, pcs., 73
Order.
Rods, bdls., 41
Pig, tons, 150

Steel.

Brown Wm.
Cases, 31
Bundles, 67
Hagill Chas.
Cases, 4
Naylor & Co.
Cases, 22
Bars, 4
Tires, 16
Frogs, 2
Seddon R.
Cases, 15
Casks, 5
Woodford W. O.
Cases, 16
Order.
Bundles, 858
Bars, 4
Cases, 1

Metals.

Byrne Joseph & Co.
Tin plates, bxs., 430
Bruce & Cook,
Banca tin, slabs, 160
Degener R. & C.
Copper, pcs., 5
Hinricks C. F. A.
Metal. bxs., 8
Noel, Saurel & Marniffe,
Sheet tin, cs., 7
Phelps, Dodge & Co.
Tin plates, bxs., 10,649
Antimony, cks., 50
Scheider J. & Co.
Tin plates, bxs., 30
Order.
Tin plates, bxs., 11,666
Lead, pigs, 802
Tin, ingots, 300

COAL.

The Coal market presents no new features of interest. Trade continues very dull, and the Coal companies have agreed upon a further suspension of mining operations until the 20th of March.

The following is the Philadelphia and Reading Coal and Iron Company's circular for the current season, with conditions for delivery and shipment of Coal for the year 1876:

PHILA. & READING COAL AND IRON CO., February 23d, 1876.

The Philadelphia and Reading Coal and Iron Company is now prepared to receive orders for the following coals: Hard White Ash Coal, Free-burning White Ash Coal, Schuylkill Red Ash Coal, Shamokin Coal, Lorberry Coal, Lykens Valley Vein Coal.

Each of the above coals will be kept separate from the other, and the same rigid system of inspection adopted for last year will be enforced in the future, and every effort will be made to send all Coal to market in the best possible condition.

Applications will be received prior to March 31st, 1876, for the purchase of a stated quantity of Coal, to be taken in equal monthly proportions at the current contractors' circular prices throughout the year, with the right to the purchaser to decline to take the proportion due in any one month; but such declination shall not give him the right in any succeeding month to take an increased quantity in lieu of that so declined.

Should any such application be accepted, the applicant will be notified of such acceptance immediately after the first of April; and to all such accepted applicants a monthly contractors' circular price will be made twenty cents less than the current monthly prices to purchasers who have made no applications, or whose applications have not been accepted.

Prices will be established on or about the 20th of each month for the following month; and contractors will be expected on or before the first of the month, to notify the company of their intention to take the Coal alloted to them for that particular month. A failure to receive such notice will be considered by the company as evidence that the prices are not acceptable to the purchaser, and that the Coal is declined.

The failure or declination to take the quota of any one month shall not prejudice the right of the applicant to take the quota of any succeeding month.

All sales subject to our printed conditions.

Any orders or propositions may be sent to E. A. Quintard, General Sales Agent, No. 9 Broad street, New York, or Thomas M. Richards, General Coal Agent, 227 South Fourth street, Philadelphia. FRANKLIN B. GOWEN, President.

We quote as follows: Anthracite, $4·60 to $5·50; Cumberland, $5·50 @ $6·25; West Virginia, $6·75; James River Steam, $6·25; James River Carbonite, $9 @ $9·50; Kanawha House, $11·50; American Gas, $6·75 @ $7·25; American Cannel, $12; Pennsylvania and Westmoreland, $6·25; Newburgh Orrel, $6; Ince Hall, $17 @ $18; Liverpool House Cannel, $17; Liverpool Gas, $10; Newcastle Gas, $5@ $7; Scotch, $6·50 @ $7.

The Coal transported over the Cumberland Branch Railroad during the week ending March 4, 1876, amounted to 337 tons, as against 1620 tons shipped in the corresponding period of last year, showing a decrease of 1283 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 14,614 tons, against 18,764 tons shipped in 1875; a decrease of 4150 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 165,058 tons.

OLD METALS, PAPER STOCK, &c.

Business in this market still continues quiet, and quotations remain about the same as last reported. Old Metals are as dull as we have noted heretofore, and there is little demand from consumers for any description of stocks. The Rag and Paper stock markets continue unchanged. Colored Rags, however, are in good request. Grass and Manilla Rope are in good demand, and, as a rule, full prices are obtained. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 5c.; Zinc, 4¼c. @ 4½c.; Pewter, No, 1, 16c.; do., No. 2, 8c. @ 12c.; Spelter, 5½c., Wrought Iron, $27 per ton; Light do., $14 per ton; Stove Plate, $12 per ton; Machinery, do., $14 per ton.

Rags, &c.—Canvas, Linen, 4⅝c. @ 5¼c.; do. Cotton, No 1, 5⅝c. @ 6¼c.; No. 2, 2¼c.; White, No. 1, 5⅝c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c. @ 5½c.; Gunny Bagging, 1½c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¼c.; Grass Rope, 2¾c. @ 3c.

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, March 7, 1876.

PIG IRON.—The trade, if anything, is more stagnant than ever, and prices decidedly weak. Business is of the most limited character, and it is impossible to effect sales in quantity unless at a material reduction in price. The outlook is most unpromising, and in many quarters still lower prices are looked for. Sales during the week have been mostly in small lots at $23 for No. 1 Foundry, $21 for No. 2, $20 to $22 for Gray Forge, and $19 for Mottled. In many instances these rates have been at 4 months, and other sales are reported at 50 cents to $1 per ton less for cash.

BARS are very quiet, and prices weak without being quotably lower; sales are mostly at 2·35 from store, some parties holding for higher prices.

RAILS.—Sales of 7000 tons of Steel Rails are reported, part cash, and part exchange for old Rails. There are numerous inquiries for Steel Rails, but the mills are fully employed, and it is probable that sales of Iron Rails will be effected within a few days to a considerable extent, in consequence of the difficulty of securing Steel Rails for early delivery. We quote at the mills, Steel Rails, $60 to $62 for 60 lb. sections, and Iron Rails, $40 to $42.

OLD RAILS.—Very little doing. Some parties are holding at extreme rates, but a few sales have transpired at $22 to $23, which is about the average range of prices.

SCRAP.—Not much offering and not much demand. Prices steady as follows: $16 to $19 for Cast and $25 to $29 for Wrought, according to quality.

NAILS.—Prices are steady, and there is no disposition to force sales at important concessions, though buyers of large lots have some advantages at quotations of $2·85 to $3, which is the price for small lots.

TIN PLATES.—There is a steady trade doing, but prices are a little week, and for large lots some concessions would probably be made on quotations, which are as follows, in currency: I. C., 10x14, $8·50 to $8·75; I. X., 10x14, $10·75 to $11; Best Charcoal, leaded, 28x20, $17; other good brands, $16 to $16·75; good fair, $15 to $15·75; best Bright Tin, for cans, &c., $7·50; good Bright Tin, do., $7·25; Coke, leaded, 14x20, $6·75 to $7.

PITTSBURGH.

PITTSBURGH, March 7, 1876.

The suspension of C. Zug & Son, of the Sable Iron Mill, has been and is still the principal topic of discussion in iron circles; being one of the oldest and always considered one of the strongest firms in this city, it, as might be expected, created quite a sensation. It is but proper to state, however, that the suspension was brought by indorsements for a near relative, engaged in an entirely different branch of business; that but for this the Messrs. Zug would have been abundantly able to take care of themselves. No action has yet been taken by the creditors, but it is believed an extension will be granted. There is reason to believe if a little patience and forbearance is exercised that the firm will be able to worry through, as the cause of the suspension has been made plain, and they have the confidence of the business public. The employes of the mill held a meeting on Saturday, their semi-monthly pay day, and, notwithstanding there were no funds to pay them off, passed resolutions of sympathy for their employers in the hour of their adversity, and pledging themselves ready to render any assistance in their power. The suspension is especially mortifying to the senior member of the firm, Major Zug, who is now well up in years, and who has been long and successfully engaged in the iron business, and this is his first reverse. The junior member of the firm, Mr. C. H. Zug, is a young man full of energy, who thoroughly understands the business in all its details, and, as already stated, there is reason to believe, if an an extension is granted, that the creditors will have no reason to regret it.

PIG IRON.—There has been a very fair degree of activity in Mill Irons during the past week, and notwithstanding the demand is still confined chiefly to supplying immediate wants, there is a large business being transacted in the aggregate, taking the general depression into consideration. Standard Mill Irons are in light stock, and while there is no change to note in prices, they are held with considerable tenacity. Foundry Irons continue very dull, and prices are weak and in buyers' favor. Quotations: Bituminous Coal and Coke Irons, No. 1 Foundry, $24 to $25, 4 mos.; No. 2 do., $23 to $24; Gray Forge, $22 to $23; White and Mottled, $20 to $21. Charcoal No. 1 Foundry, $26 to $28; No. 2 do., $24 to $25; Mill, $22 to $23; Cold Blast Car Wheel, Hanging Rock, $45 to $50.

MANUFACTURED IRON—Continues dull for this season of the year, and trade is very generally reported unsatisfactory, particularly as regards prices, which afford little or no margin for profit. Quotations are still made on a basis of 2·15 to 2·20, 60 days, with intimations that orders have been placed as low as 2c.

NAILS.—The demand for nails is not as brisk as it usually is at this season of the year, but it is expected that orders will come forward more freely as soon as the spring becomes a little more advanced. Prices weak; $2·55 to $2·60, sixty days, with two per cent. off for cash.

HORSE SHOES—Unchanged. Shoenberger & Co. continue to quote Horse Shoes at 4¼, cash, and Mule Shoes at 5¼, cash.

STEEL RAILS.—No late sales to report. Prices easy, quoted at $62 to $63, cash, delivered free on cars in Pittsburgh.

SCRAP.—The scrap trade continues dull, and dealers report that current rates afford no profit.

ANOTHER CONFERENCE AND ANOTHER FAILURE.—The Conference Committees of Manufacturers and Boilers had another meeting last night, but after a session of four hours failed to come to an agreement. The former proposed $4·62½ per ton, with an agreement to run until November, but this was rejected by the boilers. The understanding among the manufacturers at the adjournment was, that each firm was to make the best terms they could with their boilers. It is probable the mills will run only as their necessity requires, unless the boilers recede and accept the proposition made by the manufacturers. The boilers say that they will not work for less than current rates, $4·75.

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of March 6, writes us as follows: Since last report our market has been a little more active for mill grades and metal suitable for steel purposes. Although quotations remain unchanged, there is a fair demand for standard Mill Irons, and holders of choice brands are not disposed to make concessions. All grades of Foundry are dull and unchanged. The usual time, four months, is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$25·00 @ 26·00
" 2 " " " "	23·00 @ 24·00
" 1 Mill, " " "	— @ —
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	23·00 @ 24·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	22·00 @ 23·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	21·00 @ 22·00

HOT BLAST STONE COAL AND COKE.

No. 1 F'dry, from Hanging Rock Ores	$23·00 @ 24·00
" 2 " " " "	22·00 @ 23·00
" 1 Mill, " " "	21·00 @ 22·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	23·00 @ 24·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	22·00 @ 23·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	21·00 @ 22·00
No. 1 F dry, from Missouri Ores	24·00 @ 25·00
" 2 " " "	24·00 @ 25·00
" 1 Mill, " " "	25·00 @ 26·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	35·00 @ 40·00
" " Tennessee Ores	28·00 @ 30·00
" " Alabama and Georgia Ores	28·00 @ 38·00
Car Wheel from Kentucky Ores	28·00 @ 40·00

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of March 3, report the Iron market as follows: Our market remains about the same as last reported. Demand and prices, fair and low. We quote on 4 mos. time.

Mo. Stone Coal,	No. 1 F'dry.	$25·00 @ 26·00—4 mos.
" "	No. 2 F'dry.	24·00 @ 25·00—4 mos.
" "	Gray Mill	24·00 @ 25·00—4 mos.
" Charcoal,	No. 1 F'dry	24·00 @ 25·00—4 mos.
" "	No. 2 F'dry	23·50 @ 24·00—4 mos.
" "	Gray Mill	23·00 @ 24·00—4 mos.
enn. Charcoal	No. 1 F'dry	24·00 @ 25·00—4 mos.
" "	No. 2 F'dry	23·00 @ 24·00—4 mos.
" "	Gray Mill	23·00 @ 24·00—4 mos.
a. Coke Iron	No. 1 F'dry	25·00 @ 26·00—4 mos.
" "	No. 2 F'dry	24·00 @ 25·00—4 mos.
" "	Gray Mill	23·50 @ 24·50—4 mos.
H. R. Charcoal	No. 1 F'dry	26·00 @ 27·00—4 mos.
H. R. "	No. 2 F'dry	24·00 @ 25·00—4 mos.
H. R. "	Gray Mill	24·00 @ 25·00—4 mos.
Massillon Iron,	A, No. 1	31·00 @ 32·00—4 mos.
" "	B, No. 1	29·00 @ 30·00—4 mos.
" "	No. 2	27·00 @ 28·00—4 mos.
Cold Blast Car Wheel,	Mo.	35·00 @ 40·00—4 mos.
" "	Tenn.	33·00 @ 35·00—4 mos.
" "	Ala.	33·00 @ 35·00—4 mos.
" "	Hanging Rock	32·00 @ 33·00—4 mos.
Mo. Charcoal Blooms		60·00 @ 70·00—4 mos.
" Scrap "		55·00 @ 60·00—4 mos.
Mo. Charcoal Hammered Billets		75 00 @ 80·00—4 mos.
Assorted Bar Iron		@ 2·35—90 dys.
No. 1 Wrought Scrap		1·10 @ 1·25—cash.
Heavy Cast "		·75 @ ·85—cash.
Light Cast "		·50 @ ·60—cash.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of March 7: "Business in the Iron trade does not improve, and the expenses in conducting same are so out of proportion with the selling prices, that dealers are employing every means to reduce same. We quote the market dull, with unchanged list.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ¾ to 1 thick.. 1 to 4½ wide by 1½ to 2 thick	2 4-10 to 2 5-10c. ₩ lb.
Round and square, ordinary sizes, from ¾ to 2 inclusive	2 4-10 to 2 5-10c. "
Hoop Iron, 1½ wide and upward	3¾ to 4c. "
Band Iron, from 1¾ to 4 in. wide	3 to 3¼c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	3½ to 4c. "
Norway Nail Rods	7 to 7½c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	15 to 15½c. "
Machinery Steel	10 to 11c. "
Cast Spring Steel	9 to 9½c. "
Homogeneous Steel Plate	9½ to 10c. "
Perkins' Horse Shoes, per keg of 100 lbs	$4·62½
" Mule Shoes " "	5·62½

Common Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6	
Putnam Horse Nails..	23	24	25	26	28c.	per lb.
	10	9	8	7	6	
Globe Horse Nails..	23	24	25	26	28c.	per lb.

R. R. Spikes ..... 2¾ to 3c.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of March 6: We have to report continued dullness in the Pig Iron market, with very light sales, and quote prices as follows:

Baltimore Charcoal	$30·00 @ 35·00
Virginia "	28·00 @ 34·00
Anthracite No. 1	23·00 @ 24·00
" No. 2	22·00 @ 23·00
" No. 3	20·00 @ 21·00
White and Mottled	17·00 @ 18·00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of March 6: No change to note in irons; transactions are very light. Stock very small, and not accumulating. Previous quotations remain firm.

Virginia cold blast Charcoal Pig Irons (according to brand)	$27·00 @ 33·00
Virginia hot blast Charcoal Pig Irons (according to brand)	24·00 @ 28·00
Va. hot blast Coke Pig Iron, No. 1 ex.	23·00 @ 24·00
" " " " No. 2 ex.	21·00 @ 22·00
" " " " No. 3 ex.	20·00 @
Virginia Anthracite. No. 1 ex	24·00 @ 25·00
" " No. 2 ex	22·00 @ 23·00
" " No. 3 ex	21·00 @ 22·00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels).

PARIS, Feb. 20, 1876.—*Metals.*—There has been but little change in the Metal markets during the week; neither buyers nor sellers have shown much eagerness to venture upon extensive transactions. The dealings have thus been limited to supplying the wants of every day's consumption. Should the civil war in Spain come to a sudden termination, as is likely to be the case, judging from the accounts which reach us from the Northeastern provinces, a large business will result for the supplying of reopened railroad lines, and of the populations that had been cut off from all regular commercial intercourse during four years. France and England will therefore be more immediately called upon, in a commercial way, to furnish what is necessary, especially the southwest of our country, and we shall witness some activity in one quarter of Europe, at least, by which the metal trade will be benefited. The outlook in the *Copper* markets has not improved. The charters on the West Coast for the first fortnight in February, it is true, have not been so excessively heavy, being 1900 tons, but the general aspect is not favorable; England is shipping very little to India of either Copper or Yellow Metal, and as the season is backward on the Continent, there is not enough moving off to make room for the many cargoes afloat from Chili. A downward tendency is thus the inevitable consequence, the more so as there are no speculators for a rise to be met with anywhere, while so many uncertainties surround us with respect to the spring trade. The market is quiet here, and prices are drooping. We quote: Chili Bars, 212·50 francs; common ditto, 210; Ingots, 220; English Tough Cake, 215, and pure Corocoro Ore, 212·50. At Havre some Lota sold at 205 to 206·25; first brands Bars there still command 210; good current do. to, 207·50. Marseilles is weak, and without anything doing; small Ingots there 215, nominally. *Tin.*—The heavy arrivals in England upon an over stocked market at length begins to tell, and this metal seems engaged once more in a headlong downward course. It is difficult to guess where the decline will stop this time, since the deliveries cannot be expected to go on as steadily as they did last year, when the entire metal trade was in an infinitely better condition than it is at the present moment. The French markets are but feebly supported, and we quote Banca, 225; Straits, 210; and English, 210. At Marseilles Straits is 215, and Billiton, 210. *Lead* is not quite as strong in England since the demand for China has diminished, while on the Continent the spring season is yet too remote to influence transactions in this metal. French and Spanish here we quote 56·50; English, 57. Marseilles is fluctuating; orders there are none in that locality. They quote second fusion 52 francs. *Spelter* is not as active in England as is usually the case at this season, and the little demand has been filled without resorting to the Continent, where the metal, nevertheless, remains as firm as ever. We are firm here at 66 to 66·50 francs; Havre quotes 65·50 to 66. Marseilles unaltered, *Iron.*—In some localities there seem to be prospects of a revival, but we have been so frequently disappointed of late years that we are rather incredulous on this subject. Meanwhile our Iron masters have been discussing a good deal the tariff question, and what is to be done with respect to the expiring commercial treaties of France with other nations. *Coal.*—Prices in the Pas de Calais are firm; accounts from St. Etienne are contradictory; the Loire still suffers from the lack of activity in the Iron trade.

BELGIUM.

(Revue Universelle).

BRUSSELS, Feb. 20, 1876.—*Iron.*—Our last Iron exchange was well attended, not so much for the transaction of business, but from mere anxiety as to how matters are shaping. The general market in Belgium has grown weaker, the more so as a good many English sellers of Iron have of late made their appearance here, offering Pig Iron at a still further reduction. Iron industry has indeed arrived at a period of remarkable prostration when foreigners appear among us to get rid of their product at ridiculously low figures. We are glad that on the other hand our government has come to the assistance of Belgian industry, for the Iron bridge at Arquennes, as well as 40 locomotive tenders are to be built at once, and tenders to that effect are invited. At La Haye, on the 16th instant, the tenders of Belgian Iron Rail makers were accepted, to the exclusion of the Germans who asked too much. *Coal.*—During the week under review not much of a change has occurred. The season for the sale of Coal for household purposes is now approaching its termination. Coal prices for the spring and summer months will depend altogether upon the wants of our Iron masters, and the development of home industry in the branch. Should another great disappointment be prepared us under this head, we shall have a summer of unusual stagnation in the article.

GERMANY.

(Borsenhalle).

HAMBURG, Feb 19, 1876.—*Metals.*—No modification of note has occurred in the German Metal markets during the week. The wants of consumers are easily filled, and speculation has completely deserted our markets. *Copper* at Berlin is sustained at 89·50 to 91·50 marks, the 50 kilos. Stettin remains unaltered at 99. Nothing has been done here. Quotations are nominally upheld. The arrivals which have taken place have been merely transit lots. An unbroken quiet has ruled the German *Tin* markets. At Berlin, Banca is quoted 91·50 to 92·50; English, 89·50 to 90 marks. Banca, at Stettin, 96. No change here. In *Lead* not much has transpired, but prices have, nevertheless, remained firm. Berlin quotes Tarnowitz, Hartz and Saxonian 22·25 to 22·50. At Stettin Spanish is bringing 27 marks, while German remains at 24 to 25. We quote German here, 23·25 to 23·50; English, 24 to 24·50. *Spelter.*—This metal has fully maintained its attitude of firmness, but business has been restricted by the lack of available supplies. Berlin quotes 25 to 26 marks. At Breslau and here quotations can hardly be given. At 26 to 26·10 some small lots might be placed here,

HOLLAND.

(Koch & Vlierboom).

ROTTERDAM, Feb. 19, 1876.—*Tin.*—Not much of a change is noticeable here. Banca is quoted 50⅜ guilders nominally, but consumers do not touch this kind of Tin in the Dutch markets, being able to procure it cheaper outside of Holland. Great activity has, on the other hand, been displayed in Billiton Tin, of which a couple of thousand slabs have been taken at 47¾. There are now no more sellers at this. The 10,000 piculs at Batavia brought, on the 14th inst., 53 guilders the picul, which is equal to 48⅜ here and £81. 10/ at London.

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, January 12, 1876.—*Tin.*—The price continued to droop until $22·25 per picul was reached. At this pretty active buying took place, and the market was cleared of ordinary Malacca. The supplies from Malacca have lately not been as large as was expected, or as is usual immediately before the Chinese new year. The Hera is still loading for New York, and, not being full yet, another vessel has been laid on. The German barque Peter has been chartered on secret terms to load for Boston. The steamer Gordon Castle took for New York account 890 piculs. Shipments to the United States in 1875: 59,413 piculs, against 45,746, 37,758, 61,373, 49,868 and 60,304 in 1874 to 1870. *Exchange* has declined to 6/1¼ for six months' sight credit bills on London.

(Aitken, Spence & Co.)

COLOMBO, Ceylon, January 19, 1876.—*Plumbago.*—There is a fair demand, and Lumps have sold at £14, Chips at £7, and Dust at £4. 10/ per ton, first cost. The smaller sizes are exceedingly scarce. For America the Killarney is still loading. The Dragon, 696 tons, has since been fixed at 57/6 for New York, and, after taking in about 50 tons Plumbago here, will proceed to Alleppee to complete. There have been shipped since October 1, 1875, from Colombo and Galle, 40,685 cwts., against 31,192, 50,358 and 34,025 in 1874 to 1872. To the United States thus far this season, 21,738; to England, 18,274; to Marseilles, 111; to Trieste, 362, and to Australia, 200. *Exchange* has continued to improve. We quote 1/10 to 1/10½.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, ENG., Feb. 21, 1876.

THE WORLD'S IRON TRADE

appears, just at present, to be on a very limited scale. The various nations appear to be fully supplied with all kinds of iron, and seem to have entered into a conspiracy, such of them as are themselves non-producers, not to buy anything of a ferruginous nature for an unlimited period. England, as the leading maker and principal producer of this most useful of all metals, is grumbling in every one of her several iron districts, and half her machinery at the present time is lying idle for want of an adequate supply of orders. Scotland is in a state of indecision, the pig iron market there being now and then blown about—now high, now low—by the operations of a knot of speculators. South Wales is still languid, and few of its magnificent establishments show other than the feeblest signs of motion. It is in this old world corner of Great Britain, however, that the most vigorous efforts are being made to secure a footing at prices below those of the Continental makers, and it is there that wages and fuel are being most uncompromisingly reduced. Our latest intelligence from France shows that trade there is very weak and dull, with the exception of one or two great establishments—such as Creusot—which have government work in hand. The Belgians are complaining very bitterly about the sluggishness of business, but their chief producers are determinedly following the downward course of the market, and are still our most formidable antagonists. They literally swamp everything in the London building trade. Only last week a Belgian manufacturer tendered for a quantity of girders and columns against a number of English firms, and carried off the order at a difference of not less than £800 between his quotation and that of the lowest English house. The Societe John Cockerill are also, I believe, running through one or two good commissions for Bessemer steel tires. Despite these successes on British soil, however, Belgium is reporting a general home depression. Luxemburg is doing next to nothing, owing to strikes and a lack of orders. The German iron and steel trades are depressed to an extent never before known. Italy has hardly any iron trade worth speaking about, but such as it possesses is busy. Spain is in much the same demented state as she has been for many years past. It is rapidly becoming evident, indeed, that neither order nor a decent government will ever be maintained in Spain until the country is placed in a position similar to that of Turkey or Greece—*i. e.*, with a protectorate of the great powers. In that case, Cuba would rightly fall to the share of the United States. The Swedish Iron trade is fairly good, but it is chiefly confined to the production of pig and bars for export to Great Britain, and is, therefore, to a certain extent, a feeder, or subsidiary element, of our own industries. I need not waste time or space in commenting on the state of your own iron and steel industries. They, like all the rest, are in a dull and weak condition, and are likely to remain so for several months, if one may judge from the reports which reach us here. Generally speaking, then, the conclusion of the whole matter seems to point to the universal adoption of a "waiting and watching" policy. This may appear to be a sleuth hound sort of way of conducting commercial affairs, yet that it is necessary must be admitted by all who know anything, practically, of modern competition.

THE ESPINASSE PUDDLING FURNACE.

Such of your readers as may be interested in the success or non-success of the Danks' furnace, will be pleased to hear that the Espinasse puddling furnaces at Firming, put up by the Firming Iron and Steel Company, are working with fair average satisfaction. Four are now at work, and six others are being built. The *Engineer* says that "From tables supplied by M. Verdie, of the results given during the month of last November with the Espinasse, compared with the ordinary furnace in the manufacture of puddled steel, it appears that the saving in scrap for the maintenance of the hearth is about 11 kilogrammes—30 lb.—per ton of the metal dealt with, that the production is increased by 35 per cent., that the waste is slightly less, that the consumption of coal is reduced by about 31 per cent., and that the cost of labor is reduced by about one-third. The quality of the metal produced is good, being much better than that turned out by hand. The paddles last about twelve days, and the lower part of the shaft carrying them need only be renewed after a month's working. The total cost of maintenance per month is 23*f.* 70*c.*—18/11¼—as compared with 47*f.*—37/7—for the ordinary furnace."

"THE BATTLE OF THE STOVES."

Under this heading the *Engineer* has the following remarks on a case which is now prominently before the public: "The coal famine and resultant high prices which occupied but too prominent a place in the public mind in 1872, caused the manufacturers of stove grates and house fire stoves to invent many cunning devices for the purpose of diminishing the consumption of fuel to the lowest possible limits, without at the same time losing any of the heat so derivable. The great principle had in view was chiefly held to be the throwing out of the fire-bars as far as possible into the room, the admission of a perfect draught, and the smallest possible aperture for smoke, so that little or no heat might escape by the chimney flue. To an undiscerning public, or even the but partially initiated many who dabble in "cold iron" matters, these desiderata would appear to be simple in compass, and by no means difficult of attainment. But no. Experience such as we are about to relate has fully and freely demonstrated that such has not and can hardly be the case. Difficulties and dangers have been incident from the very outset, and have, in at least this one instance, been the cause of a lawsuit of no slight duration. This lawsuit came before the Lord Chief Baron Kelly and Barons Bramwell and Amphlett, in the Exchequer division of the High Court of Justice, Westminster, on Friday and Saturday last. The plaintiffs were Messrs. Marshall, Watson & Moorwood, of Harleston Ironworks, Sheffield, and the defendants, Messrs. Steel & Garland, of the Wharncliffe Works, Sheffield. The former claimed that the defendants had infringed a patent for a fire stove which they, the plaintiffs, had invented. Several counsel appeared on either side. It was duly set forth by Mr. Aston, Q. C., with Mr. Patchett, on behalf of the plaintiffs, that the patent of his clients had been dated March 24, 1873, whereas that of the defendants was March 31, 1873. The plaintiffs' patent was specifically granted for "an improved construction of a domestic fire stove for economizing fuel and producing a better radiation of heat," while, on the other hand, the defendants' patent was for "an improved construction of domestic stove for economizing the consumption of fuel and utilizing the heat thereof." Now, to the mind of an ordinary individual, these two statements were as nearly alike as Cæsar and Pompey are popularly supposed to be. That such, however, was not by any means the case was proved to any amount of demonstration by the Attorney General, Sir John Holker, Mr. Gorst, Q. C., and Mr. Macrory. These three gentlemen occupied the greater part of the Saturday's sitting in detailing a variety of minor points in the two stoves, and evidently so bewildered the ordinary reporters of the courts, with the niceties of their arguments—duly illustrated and explained by means of models and drawings, in

court—that those gentlemen deemed it prudent to abandon any attempt at fully reporting the matter, seeing that we are told that the "arguments were not of a nature to be generally interesting to the public." The reporters, however, are good enough to hint that the forensic blows and cuffs chiefly related to some mysterious atmospheric phenomenon termed "the dominant current of air," in which the plaintiffs claimed to have a peculiarly patent right. "Feathers" were also lightly talked of in select legal phraseology, and were lightly, albeit only verbally, tossed about from one side of the table to the other, and were held to be the "cardinal point" of the invention, and of the alleged infringement. The common register stove was also mentioned as being the "substratum" of the invention itself—a sort of geological assertion not included in the compilations of Hugh Miller or Sir Charles Lyell. Even the grammatical construction of the rival specifications was made the subject of keen discussion, and the learned brotherhood laid about them with much unction and all their might and main, as to the appropriateness or otherwise of certain phrases "as applied," say the reporters, "to particular features of the construction of grates." The judges, with true judicial foresight, rose on Saturday before the arguments were concluded, and the case was again to have come up on Tuesday, but did not do so, as we infer from the absence of any report. It is expected that this *cause celebre* of patent cases will yet occupy a good deal of judicial time and attention before any decision can be given. In the meantime, as the matter is *pendente lite*, we, of course, abstain from commenting in any way upon the merits of either sides of the questions at issue.

SCOTCH PIG IRON TRADE.

The Glasgow warrant market remained quiet during the whole of last week, with a further decline of 1/ to 1/6 in prices. On Monday quotations were 61/, 60/9 and 60/10½; on Tuesday 60/10½ was the average; on Wednesday, 60/6, 60/3 and 60/6; on Thursday, 60/4¼ and 60/7½, and on Friday, 60/9. This morning the market has opened quietly, there having been no market, as usual, on Saturday. There are now 119 furnaces in blast in Scotland, equal to a total weekly production of 20,587 tons. Last week's shipments were 7994 tons—an increase of 202 tons over the figures for the corresponding week of 1875. The stock in Connal's stores continues to decrease slightly, the quantity held this morning being 61,140 tons, a falling off of 265 tons during the week. Freights, Glasgow and Ardrossan to Boston, have been reduced to 9/ each during the week.

Writing from Glasgow, on February 18th (evening), Messrs. James Watson & Co. said: "Our market for Scotch pig iron has been flat during the week, with a further reduction in price of warrants and shipping brands. Business in warrants has been done from 61/ to 60/4½, cash, closing to-day rather sellers at 60/9."

	No. 1.	No. 3.
G. M. B., at Glasgow	61/9	60/9
Gartsherrie, "	71/6	62/6
Coltness, "	74/6	63/
Summerlee, "	70/	62/6
Langloan, "	72/	63/6
Carnbroe, "	65/6	62/
Calder, at Port Dundas	74/	62/
Glengarnock, at Ardrossan	63/	62/6
Eglinton, "	61/6	60/6
Dalmellington, "	61/6	60/6
Shotts, at Leith	72/	63/6
Kinneil at Boness	64/6	61/

Messrs. John E. Swan & Brother's (limited), prices current, same place and date:

Glasgow Brands.	Furnaces B'wing, 119	Furnaces Out 30.	Furnaces Built, 157.	Prices. No. 1.	No. 3.	No. 4
Gartsherrie	13	3	16	71/	62/	64/
Coltness	12	0	12	74/	62/	..
Summerlee	6	1	8	70/	62/6	65/
Langloan	6	0	8	72/	63/	65/
Govan	5	0	5	62/	61/	64/
Calder	4	0	7	74/	62/	65/
Shotts { Bess'mer	2	0	2	80/	..	..
Shotts { Ordinary	4	2	6	72/	63/	..
Carnbroe	5	1	6	65/	61/6	65/
Wishaw	3	0	3	..	..	..
Monkland	5	1	6	62/	61/	64/
Chapelhall	3	0	3	67/	..	..
Clyde	5	0	6	62/	61/	..
Quarter-Clyde	4	0	5	62/	61/	..

* f. o. b. Glasgow, 1/ per ton, extra.

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., 60/9.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock	7	2	9	67/6	62/	62/
Ardeer	4	1	5			
Eglinton { Brand'd	6	2	8			
Eglinton { Eglint'n	4	0	4	61/	60/	62/
Lugar { Brand'd	3	0	3			
Muirkirk { Eglint'n	3	3	6			
Portland						
Dalmellington	6	2	8	61/	60/	59/

EAST COAST BRANDS—*f. o. b. in the Forth.*

Kinneil	3	1	4	64/	61/	..
Almond	2	1	3	64/	61/	62/
Carron { Selct'd	4	2	6	70/	..	..
Carron { Ordn'y				64/	..	..
Lochgelly	0	4	4	..	..	..
Lumphinnans	0	2	2	..	..	..
Bridgeness	0	2	2	..	..	..

THE CLEVELAND DISTRICT.

A sale of pig iron, by auction, took place during the week just ended, at Middlesboro. Lot, 1450 tons of No. 1, g. m. b., realized 53/9 per ton; 500 tons same fetched precisely the same money; 40 tons of No. 1 Clarence, 53/6; 336 tons No. 3, g. m. b., 48/9; 668 tons No. 3, g. m. b., 48/9; a precisely similar lot same price, and 440 tons No. 3 Clarence, 50/9. The finished and pig iron trades of the district are unchanged, all departments being greatly depressed with the sole exception of those devoted to the production of ship plates. These plates have been lowered about 5/ in price and are again in request. The iron stone miners, of the whole of Cleveland, have been awarded a reduction in wages of 5 per cent., which brings their rate of payment to the same level as that paid four years ago—an interim drop of 47 per cent. The directors of Bolckow, Vaughan & Co. (Limited) recommend a dividend of £3. 1/3 per shares upon the A shares and £2. 12/6 upon the B shares of the company, for the year ending December 31st, last.

TRADES OF SHEFFIELD.

Nothing of special interest or importance has transpired in this district since my last. In the iron trade there has been no accession of orders worth naming, with the exception of a few small commissions for general foundry work at establishments devoted to that class of iron making. Some of the large London companies have recently given out large contracts for gas and water fittings of various descriptions, as well as for main pipes of all sizes. It is stated that although much of the work has been entrusted to Scotch houses, or firms in the vicinity of Middlesbrough, yet a few favors have been distributed hereabouts as well. The Northern makers in these instances have been enabled to compete with more than ordinary chances of success in their favor, seeing that pig iron is cheaper with them than with us, and they have also the advantage of cheap sea freights to the metropolis. Iron can be taken from Glasgow or Ardrossan to London at 7/6 to 8/ per ton, and from the East Coast of Scotland to London for 5/ to 6/6 the ton. These prices are much lower than railway rates even from South Yorkshire to the metropolis.

Pig iron is fairly firm here, taking into consideration the weakness which has characterized the Scotch and Cleveland iron markets during the past fortnight. There would, doubtless, be a further decline in prices in this vicinity were it not for the fact that much of the total production of the Derbyshire furnaces is being sent into South Staffordshire. The leading quotations for Bessemer pig iron are those of your price lists. Some interest is naturally felt here in the apparent termination of the civil war in Northern Spain, a large amount of British capital being locked up in the mining districts around Bilbao. These districts are now reported to be in a quiet condition. Work is said to have been resumed in the mines with such effect that there is already a large stock of minerals in the Somorrostro vicinity for ready immediate exportation. If this be the case, of which there is but little doubt, we shall be enabled to resume the importation of Spanish ores, instead of having to resort to Elba or Northern Africa for supplies. For the manufacture of the local ordinary pig iron a good tonnage of ore continues to be brought here from the Northamptonshire and the North Lincolnshire iron fields; the latter district is being rapidly and largely developed. The Trent Company has seven furnaces erected, out of which number three are in blast. The Frodingham Iron Company has four large furnaces, and the Redbourne Hill Company two furnaces in blast. The North Lincolnshire Iron Company is turning out a good production from four large furnaces, as also is the case with the Lincolnshire Smelting Company from two large furnaces. The Appleby Iron Company are erecting two furnaces.

In the merchant iron departments very little business is being done, although both producers and merchants are willing to meet the requirements of problematical customers as far as possible by bringing down prices to the lowest limit permissible. Quotations nominally are those of the list, but in reality all common and medium irons can be had at a trifling discount from the nominal figures.

At the Parkgate Iron Works there are now two plate mills in full operation, and the merchant mill is being prepared for the resumption of work with all possible dispatch. It will not, however, be in order before about a fortnight from this time. Another plate mill will, if possible, be restarted next week. The same company are doing very well in pig iron, and are said to intend to blow in there three furnaces at The Holmes, near Rotherham.

The majority of the hardware trades are only indifferently engaged, with the exceptions mentioned in last week's report. In the cutlery industries there is much depression. The German manufacturers are alleged to be "running out" Sheffield goods of this description from many markets, or at any rate are successful in competing with us in common goods, and the Americans have fully succeeded not only in supplying themselves but the Canadian market. Under these circumstances not a few of the Sheffield manufacturers are desirous of introducing much more machinery into their workshops, and would at once do so were it not for the determined opposition of the trades unions and the men generally. This opposition is greatly to be regretted, in the interests of the town, as there can be little or no doubt that the keen competition of the day calls for every possible help in the way of mechanical improvements. The steel fork manufacturers held a meeting on Monday, at Grimesthorpe, Sheffield, but the result has not transpired at the time of writing.

The coal trade is apparently growing duller. The men, on the average, are only making four days weekly even at the best concerns. On Monday the Sheffield Coal Company issued circulars giving the following list of prices, which show reductions of 1/ to 1/2 per ton. Picked branch, 14/; best Birley Silkstone, 12/; best Birley Silkstone, in picked cubes, as sent to London, 12/4; screened Silkstone nuts, 6/6; screened seconds coal, 8/; coal breeze, 10/; hard melting coke washed, 18/; and unscreened slack, 3/, all per ton of 21 cwt. at the pits. The West Yorkshire pit prices are: best coal, 14/6; second, 13/; slack, 7/; and unriddled, 4/6 per ton. At the Kilburn colliery, Derbyshire, best coal is 19/ at the pit, and at Kilnhurst, best house coal, 14/; seconds, 13/; and slack, 7/6 per ton. The quantity of coal shipped at Grimsby during January, by the Manchester, Sheffield and Lincolnshire Railway Company was 20,547 tons, as against 26,223 in the same month of 1875. The railways took a considerably less tonnage of coal to London during January. The Midland took 148,946; London and Northwestern, 104,913; Great Northern, 82,231; and Great Eastern, 53,689 tons. The South Yorkshire collieries sent much less than usual, owing to the Swaithe explosion, and disputes on the question of wedging. Five new collieries are now just getting to work, which will add, it is believed, about 1,500,000 tons to the annual output. The Derbyshire collieries sent 77,000 tons to the metropolis by rail.

The scissors forgers have now determined to go on with their demand for a new and increased rate of wages. They ask for an advance of from 20 to 25 per cent., and the scissors grinders, as well as the "putters together," are also moving for higher wages.

Iron says: "Messrs. Slater Brothers, cutlery manufacturers, 107 Eyre street, Sheffield, have just completed a wonderfully constructed knife, which they some weeks ago received orders from London to execute for presentation to his Excellency the Chief Commissioner of Public Works under the Mikado of Japan. The knife is made of the best stag horn and steel, and is a masterpiece of workmanship. It is 8 inches long, and has no less than 24 or 25 different articles, including a large blade 6 inches long, with a lock spring; a smaller blade, a fruit blade, a blade suitable for engraving on wood, a corkscrew, tweezers, brad awl, a saw and razor. On the name blade the words "Euoye Masaru" are tastefully engraven. The knife, which is placed in a suitable case, will, we understand, be exhibited in London for a week, and afterward be forwarded to Japan." Cutlery, for the most part, is very much neglected.

SOUTH STAFFORDSHIRE AND BIRMINGHAM.

There is no change to note in the condition of the trades of this district. Pig iron is a drug, and almost every description of finished iron is neglected. Such few sales as are being effected are, for the most part, negotiated at figures which are clearly below the nominal list rates. Foreign customers are writing, saying that they cannot again give out further specifications until good, or even best, bars are obtainable at £8 per ton. Letters from Australia narrate that there are a couple of iron works at Adelaide which are turning out all kinds of tinned goods, stoves, bedsteads, &c., in large quantities, chiefly using raw materials imported from Great Britain.

SOUTH WALES.

The iron workers of the principality have generally accepted the drop in wages of 7½ on puddlers' and 12½ per cent. on mill men's pay. A moderate, but only moderate, amount of work is being done at the Tredegar, Rhymney, Dowlais, Briton Ferry, Landore and Ebbw Vale works. At Cyrfarthfa and other works next to no work is being done in iron producing. One of the leading establishments in South Wales is said to have at length secured a rail order which will last seven or eight months in execution. The total quantity of iron exported from Wales during January was 9653 tons, most of it being sent from Newport, which is, in reality, in Monmouthshire. The coal trade is now quieter.

THE METAL MARKETS.

The metal markets opened quietly on Monday morning, but both copper and tin grew firmer as the day advanced, although lead drooped somewhat. Chili was £79. 10/; and Straits tin, £78. On Tuesday 50 tons Chili bars, g. o. b., sold at £79. 10/; 25 tons to end of April, £79. 5/ to £79. 10/. Tin was clearly higher; 30 tons Straits done at £79, spot, and 29 tons Australian, £78. Fifty tons Silesian spelter went at £25. 5/. On Wednesday copper and tin were both weaker, a small lot of Straits being done at £78. 10/. On Friday a little business was done in Chili bars at £79. Tin was again lower, a fact which appeared to tempt buyers, as a considerable amount of business was done at £77 to £77. 10/ for Straits, and £76 to £76. 10/ Australian, spot and to arrive.

Messrs. Von Dadelszen & North report: "*Copper.*—Dull and lower. Chili bars, g.o.b., have declined to £79, and other brands in proportion. Deliveries during first fourteen days of this month have been large; from Liverpool, Swansea and Havre 2743 tons. Charters for the first fortnight of February were 1900 tons. Australian is also lower, with little doing. For both Wallaroo and Burra the price asked is £88, but no doubt a lower price would be accepted if positive offers were made for a good quantity. English smelters now quote tough, £86; select, £87; strong sheets, £93; India sheets, £91. *Tin* continues to decline; the last sales of Straits were at £77. 10/; Australian, £77, both on the spot and for forward delivery. In Holland, Banca is quoted 50½fl.; Billiton sold at 47½fl. The Billiton sale in Java went at 53fl. per picul. English dull; ingots, £81; bars, £82. *Tin Plates.*—Much depressed, and obtainable at very low prices. *Lead.*—Dull; English pig, £22. 2/6 to £22. 7/6. *Spelter.*—A parcel of common Silesian has been done at £25. 5/ in warehouse here. *Quicksilver.*—The importer's price has been reduced to £10. 10/."

Another report says: "*Copper.*—Unchanged; g.o.b. Chili bars, £79. to £79. 5/; Australian continues dull, at £88 for Burra and Wallaroo; more demand for English tough, at £86; other sorts as previously quoted. *Tin.*—A considerable business done, at lower prices, £77 having been accepted for Straits on the spot, and £76. 10/ for Australian; cash and forward delivery the latter has been sold at £76 to £76. 10/."

The following is from Messrs. French & Smith's report: "*Tin.*—More doing at lower prices; Straits, £77. 10/ Australian, £76. 10/ to £77. *Copper.*—Dull; Chili bars, £79 to £79. 10/. *Lead* and *Spelter* quiet."

Latest Liverpool prices are:

Iron: f. o. b. in Liverpool, per ton.

	£	s.	d.		£	s.	d.
Merchant bar	7	7	6	@	7	15	0
Merchant bar, in Wales	6	17	0	@	7	5	0
Staffordshire	8	5	0	@	11	15	0
Hoop	9	10	0	@	10	15	0
Sheet	11	5	0	@	11	15	0
Nail rod	8	5	0	@	9	0	0
Bar, best crown	8	5	0	@	8	15	0
Boiler plates	10	10	0	@	12	0	0

Tin Plates: f. o. b. in Liverpool, per box.

	£	s.	d.		£	s.	d.
Charcoal, I. C.	1	5	6	@	1	8	0
Coke, I. C.	1	2	0	@	1	4	0

Copper: Delivered in Liverpool, per ton.

	£	s.	d.		£	s.	d.
Bolt and Sheathing	97	0	0	@	0	0	0
Tile	90	0	0	@	0	0	0
Tough cake	90	0	0	@	0	0	0
Best selected	92	0	0	@	0	0	0

Gas for Heating Purposes.

The *Journal of Gas Lighting*, of January 4th, contains a full abstract of a paper read before the Society for the Promotion of Scientific Industry, by Mr. John Wallace, of Newcastle-on-Tyne, on "The Combustion of Gas and the Theory and Structure of Flames." The most interesting, and what seems to us the most important part of the paper practically, is the application of heat from ordinary gas for mechanical and domestic purposes. If there can be devised an economical method of utilizing the great convenience and cleanliness of gas for heating purposes it, will be a great blessing to humanity. There are so many objections to the ordinary fire, especially where the amount required at one time is so small as not to justify a special fireproof construction, that the wonder is that more progress has not been made in producing a good apparatus for heating by gas. No one doubts the ability of the gas profession to accomplish this if they would only take the matter seriously in hand. And why should they not do it? Is there really any good and sufficient reason why apparatus cannot be devised to use gas in mechanical and domestic operations to such an extent that the day consumption would equal if not exceed that of the night? It is not necessary to enter into a calculation as to the average length of the evenings when gas is burned for illuminating purposes. It would seem evident that the ordinary hours of labor would exceed those between the close of labor and the beginning of rest. Certainly the cost of distribution through the same pipes would be no greater in delivering gas for 24 consecutive hours than for 12, while the daily make would be much more uniform. An increased consumption should diminish the proportionate cost of manufacture, and it can not be denied that large sales at moderate profits is the true business maxim. Make the consumer feel that he gets what he pays for both in quality and quantity, and he will take something else to grumble about. As it is now it is a very prevalent fashion to grumble at gas companies, but let them increase their usefulness by improving the condition and the economy of the work shop and the kitchen, and there will be much less cause or occasion for this. Perhaps at the present price of gas and coal there may not be so much saving in the use of the latter by the mechanical arrangements we now have. But in England they are following this matter closely, and some of the facts given by Mr. Wallace show that there is economy in the use of gas. He exhibited a gas furnace with 12 burners which had been in use for some time beneath a steam boiler and raised the steam to drive 3 printing presses at a cost of 7 cents per hour. We give in his own words a description of the arrangement: "I have here a gas furnace of 12 burners, each 1 inch in diameter, fixed on a flat cast iron box, which supplies them all with gas. * * * *

"The products of combustion, after passing upward through the tubes of the boiler, are carried by a jacket down the outside, and escapes by a flue at the base of the boiler, thus making the whole service available for heating. This arrangement also renders a damper unnecessary, as the speed of the draught is due to the difference of the temperature of the hot gas ascending in the tubes and those descending in the jacket. Since this furnace was used the tubes have never required to be swept, a most satisfactory testimony to the completeness of the combustion. Previously, when another furnace was used which depended on the chimney draught, the whole heating surface had to be swept at regular intervals.

"Among the useful applications of the heating burner, the gas stove is one of the most important. It is to be found wherever gas is used, and in spite of many real or imaginary objections, it is steadily making its way into public favor."

A very simple method is given by which the supply of gas is regulated by the temperature of the room itself. An automatic regulator is made as follows: A thin copper vessel of a certain capacity contains the air which, by its expansion, is to regulate the gas supply. There is a small valve on the top of this. A small pipe leads from the copper vessel to one end of an inverted syphon containing mercury, the other end of which has within it a bell mouth tube suspended over the mercury at about one-eighth of an inch from its surface. The gas to be burnt enters this end of the syphon over the mercury, up the bell-mouthed tube thence through a pipe to the burners, where there is a small jet constantly burning from a supply independent of the bell-mouth. As the expansion of air in the closed vessel acts on the mercury in one leg of the syphon it depresses it and raises it in the other, thus reducing the space between the bell-mouth and the mercury, and if the air continues to expand it will close it entirely. These instruments have been so successfully adjusted that a change of 2° in temperature will make them work—adjusting, extinguishing and relighting the burners as heat may be required for weeks or months together.

Old Ironsides.

A correspondent, writing from Boston, makes the following contribution to the history of the frigate "Constitution:"

There is at least one interesting and important circumstance connected with the career of the old frigate Constitution during the war of 1812 which has escaped the historians. The exploits of the American navy during that war commenced with the escape of the Constitution from an English squadron. On the 12th of July the frigate, completely equipped and well manned, left the Chesapeake Bay bound for New York. On the 17th she discovered the British squadron, consisting of the Africa, 64; the Guerriere, Shannon, Belvidera and Æolus, frigates, with a brig and a schooner. The Belvidera was within gun shot; the day was calm and spent in towing, maneuvering and firing. On the morning of the 18th a light breeze sprung up, when the Constitution spread all her canvas, and, by outsailing the enemy, escaped a conflict, which she could not have maintained with any hope of success against a force so greatly superior. The chase was continued sixty hours, during which the whole crew remained at their stations. All the officers of the British squadron applauded the conduct of Captain Hull, and though mortified at losing so fine a ship, gave him much credit for his skill and prudence in managing the frigate.

On Sunday, the 26th of July, the Constitution arrived in Boston Harbor. On Tuesday, the 28th, Captain Hull came up to town. On his landing and reaching State street he was received by his fellow citizens with repeated huzzas. The Captain, in accepting the complimentary tributes of the Bostonians, paid a handsome tribute to the services of Lieutenant Morris (afterward Commodore), and also to the men comprising the Constitution's crew.

At a time when the wind was very light the sails of the Shannon were all furled, and the boats of the squadron were all put to tow her directly to windward toward the Constitution; at the same time Captain Hull was "kedging" his ship forward faster than the enemy was able to advance by towing. He had gained a considerable distance before the enemy, who constantly observed him with their glasses, perceived the manner in which he was leaving. They then "kedged" in their turn, but not with the same rapidity, owing probably in some measure to the precaution observed by Captain Hull, when his boats came home, instead of making them fast to the ship, of hoisting them up at the davits. This maneuver of "kedging" a ship at sea, in twenty five or thirty fathoms water, was an ingenious and novel experiment. It was first suggested, it is understood, by Lieutenant (afterward Commodore) Charles Morris. The matter of "kedging" is probably not generally understood by the average individual, and even to seafaring men the manner in which it was employed in the case of the Constitution was an interesting novelty, and a circumstance which well illustrates the truth of the old adage, that "Necessity is the mother of invention." When a vessel becomes becalmed and circumstances render it desirable that progress should be made, even in the absence of a wind, kedging is resorted to by taking the anchor in a small boat and carrying it a long distance in the direction desired and throwing it to the bottom, a line or hawser connecting it with the vessel. The anchor once fastened to the bottom is to some degree almost permanent, and by hauling in the line on the deck of the vessel the ship is thus moved in the direction of the anchor. The anchor is then taken up and again carried forward and the same process repeated, and thus slow but steady progress is made. Of course kedging in this manner cannot be resorted to unless the water is sufficiently shoal to allow the anchor to be easily bottomed, and this was precisely the misfortune which presented itself in the case of the Constitution. The enemy's ships—half a dozen in number—although becalmed in a like manner, were somewhat lighter than the old frigate, and by towing and rowing some small progress was made toward overhauling and capturing the Constitution.

It can well be surmised that the situation on the American vessel was a very grave one, and unless progress was made an engagement, and perhaps the capture of the ship and crew, were imminent. It was in this emergency that the inventive genius and prompt action of Lieutenant Morris and his brother officers and men secured to the American navy a bloodless but important victory, which history failed to record. Three huge parachutes, which could be readily opened and closed after the fashion of an umbrella, were immediately rigged up from some canvass which was fastened to a frame work of iron, and by an ingenious manipulation the old frigate was "kedged" along at a rapid rate until a friendly breeze sprung up and then she was so far in advance of the British vessels as to be enabled to distance them in heading for the friendly port of Boston. These parachutes, fully 25 feet each in diameter when spread, were carried forward in small boats, then spread out and thrown into the water, being connected with the frigate by hawsers. The resistance which these novel contrivances afforded in the water when the crew pulled on the lines was such as to allow the Constitution to kedge along in a manner so rapid as to mystify the officers of the British vessels which were pursuing, and it is, therefore, not strange that they spoke in complimentary terms of the ingenuity and skill of the commander and officers of the Constitution.

In view of the fact that the billet head of the old and renowned frigate is to be one of the features of the Centennial show, why would it not be well that the ancient curiosity should be displayed side by side of these novel parachute contrivances which probably saved the Constitution from falling into the hands of the enemy? That their usefulness and importance at the time specified is not exaggerated is ascertained from the fact that when, years afterward, Mr. Morris, who was the father of Dr. William B. Morris, of Charlestown, was advanced to the rank of Commodore, and was in command of the Charlestown Yard, he gave special orders that they should be carefully preserved. This order was received and attended to by Master Sparmaker Edward Harding, who has been holding the same place during a period of almost 50 years. A few years ago there was a call for the novel contrivances, and upon their singular history being developed two of them were sent to the Naval Academy, at Annapolis, Md., by Captain S. B. Luce, and the other is still at the Charlestown Yard in charge of Mr. Harding. It seems that there would be a singular appropriateness that the one now here should be forwarded to Philadelphia with the old frigate's billet head, and the suggestion is respectfully submitted to the Secretary of the Navy.

Frozen Quicksilver.—The last cold snap was the severest ever known in the vicinity of Carson River, a most singular incident being the freezing of the quicksilver in use at the reduction mills. At the Eureka Mill, running 60 stamps and situated in a gorge where the west wind rushed through day and night like the current of air passing out of a blow pipe, it was noticed that the quicksilver pump had ceased to perform its proper functions. The powerful machinery of the pump continued to work, but no quicksilver was raised to the pans on the first floor. After passing through the pans, settlers and strainers, the quicksilver goes down to the lower floor of the mill, and is then collected in a tank about four feet square, from which it is pumped up to renew its round through the pans, settlers and strainers. When the pump failed to bring up quicksilver some of the workmen went down to the lower floor, expecting to find that the tank had sprung a leak. They found the quicksilver all there, however, but greatly to their surprise it was frozen solid. The pump being useless they got a spade and chopped the quicksilver up into cubes, which they then carried up to the pans with ice hooks.

From "Notes on Jackson County," in the Jackson *Standard*, we extract as follows: When iron furnaces were being built in Scioto and Lawrence counties, from the year 1835 to 1835, it was discovered that there was an abundance of the best iron ore in the southern part of the county, and the vast forests had not at that time been destroyed to any great extent. The difficulty was that our county was too far from the Ohio River to haul iron there, or goods out to the furnaces. About the year 1835, Rogers, Hurd & Co., of Lawrence county, purchased a quantity of public lands in Hamilton township, near the Scioto county line, and built Jackson Furnace the next year. They hauled their iron to the Ohio River at Scioto-ville, a distance of, perhaps, from 12 to 15 miles. About the year 1848 a company was formed to build Keystone Furnace, in Bloomfield township. In this company were John Campbell, now of Ironton, and John McConnell and his brother Samuel McConnell, then of Wheelersburg, and others. They hauled part of their iron to Gallipolis, and at times took it down Raccoon Creek in boats. These two were all the furnaces built in Jackson county prior to the construction of the Scioto and Hocking Valley Railroad, some 25 years ago.

We wish to call the special attention of merchants to this

PATENT

BRACKET SAW FRAME.

We have never before made anything which sold so readily, and gave such universal satisfaction.

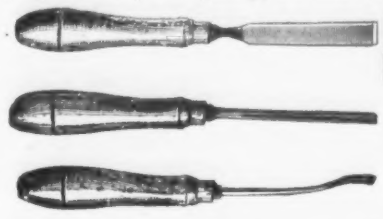
Where one is sold in a neighborhood, it makes a demand for many more. We have now sold 40,000 of them and have not yet heard one complaint, but we have a large number of letters expressing great satisfaction with them. We have advertised them largely and thereby created a demand in every part of the country.

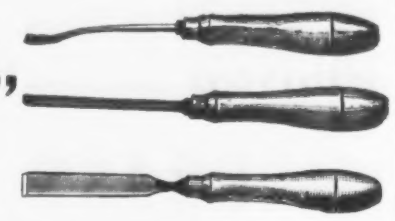
The list price of Rosewood Frames is $1·25 each, and of Birch $1·00 each, with the same discount that we make on our Barber Bit Braces. Price of Saw Blades, $1·20 per gross net.

We also make sets of

CARVING TOOLS.

Price of the three tools in nice paper box $1·00, discount 25 per cent. to the trade. These tools are sharpened and fitted for work. They are of superior quality, and sold at a lower price than imported tools.



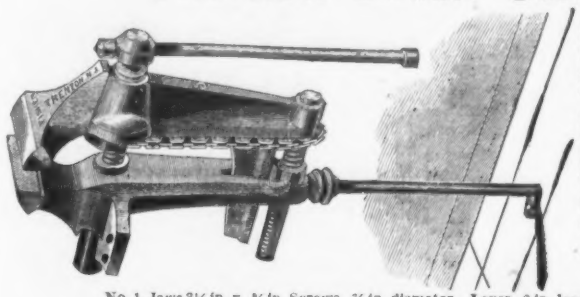


Millers Falls Co.,

No. 78 Beekman Street,

NEW YORK.

The New Double Screw Parallel "Leg" Vise.



We are now ready to furnish, as the result of more than thirty years' experience, our latest style of Vise—the best yet made. It is **stronger** than any other, whether of Foreign or of American make; always parallel and holding with a tighter "grip." The jaws are of convenient shape for the workman to get near his work equally well for filing or chipping. Instead of the heavy, clumsily formed jaws of the cast iron Single Screw Vises of the common "parallel" type, and which, depending upon slide alone for preserving parallelism, can never be screwed up very hard without "jamming" on the sides or breaking.

Our New Vise combines all the advantages of the "Peter Wright" Leg Vise, of strength and lightness, fastening to the floor and bench, and at the same time greatly superior to it; is always perfectly parallel at all points of opening, and never gets out of line. Embodying the same general principle as the well known Chain Vise, so long made by us, we have by new, scientific proportioning of all the parts, and with our recently improved metals for their manufacture, obtained so perfect a tool, that we now *warrant* these Vises for *three years* from date of manufacture stamped upon each.

The Jaws are of best Tool Cast Steel, welded on, file cut and properly hardened. The screws are forged of the best refined iron, and work in *solid cut thread* boxes.

The lower screw maintains the parallel position of the two jaws, by having exact motion with the upper working screw through the connecting chain which regulates it.

The chain is very accurately made of steeled links and rivets, and having no strain of the work upon it, is therefore as durable as all the other parts.

Prices with Special Discounts to the Trade.

No. 1,	Jaws 3½ in. x ⅝ in.	Screws	⅜ in.	diameter.	Lever	9 in.	long,	Opens 4¼ in. $8 00
" 2,	" 4⅛ in. x 1 in.	"	1⅜ in.	"	"	13 in.	"	" 5¼ in. 12 00
" 3,	" 5¼ in. x 1⅜ in.	"	1⅛ in.	"	"	16 in.	"	" 6½ in. 17 00
" 4,	" 6¾ in. x 1⅝ in.	"	1½ in.	"	"	19 in.	"	" 7½ in. 22 00
" 5,	" 7 in. x 1½ in.	"	1⅝ in.	"	"	24 in.	"	" 9 in. 30 00
" 6,	" 8 in. x 1⅝ in.	"	1¾ in.	"	"	26 in.	"	" 10 in. 34 00

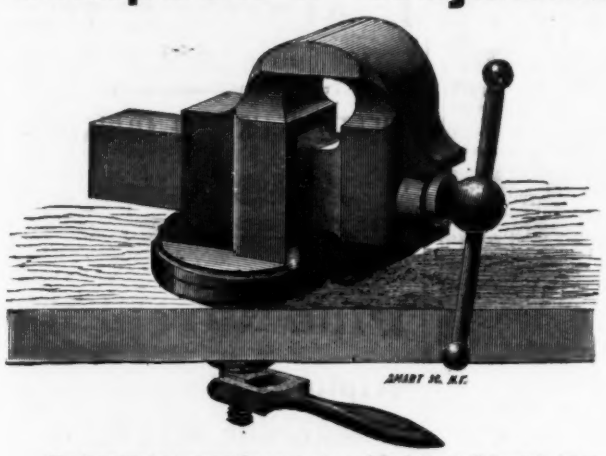
All sizes of these Vises furnished with Swivel Attachment, at an additional cost of $1 to $3. Sold at the General Agencies.

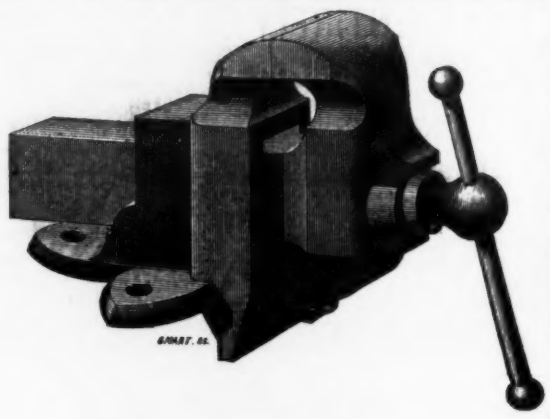
THESE GOODS ARE SOLD BY THE GENERAL AGENTS (with special discounts to the trade).

New York.—Messrs. J. CLARK WILSON & CO.—RUSSELL & ERWIN MFG. CO.—Messrs. HORACE DURRIE & CO. Boston.—Messrs. GEORGE H. GRAY & DANFORTH. Philadelphia.—Messrs. JAMES C. HAND & CO. Baltimore.—Mr. W. H. COLE. Louisville.—Messrs. W. B. BELKNAP & CO.

FISHER & NORRIS, Sole Manufacturers, Trenton, N. J.

Simpson's Adjustable Parallel Vises.

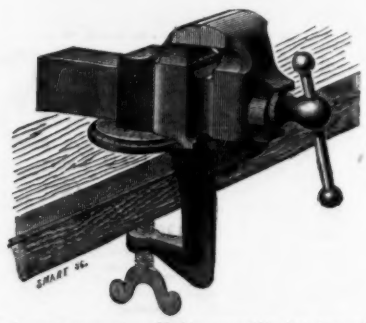


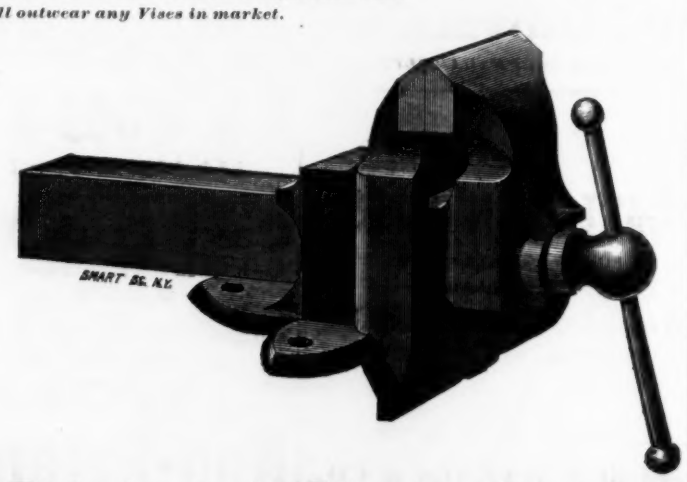


The jaws can be *instantly opened or closed the full length,* by one movement of the hand, *without the use of the screw.*

They combine the QUICK ADJUSTMENT with all the advantages of the best Screw Vises, holding the work with as *slight* or *firm* a grip as may be desired, *without any liability to jar or work loose, as is the case with other adjustable vises.*

The Screw being used merely to give the grip, they will outwear any Vises in market.





Their extreme simplicity constitutes one of their strongest recommendations.

☞ **Send for Price List.**

BAILEY WRINGING MACHINE CO., Sole Agents, 106 Chambers Street, N. Y.

HOWARD PARALLEL BENCH VISE.

MANUFACTURED BY

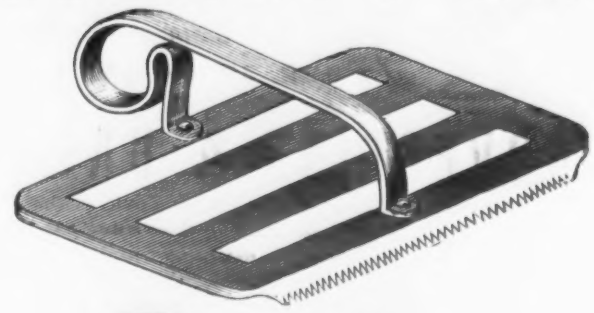
Howard Iron Works,

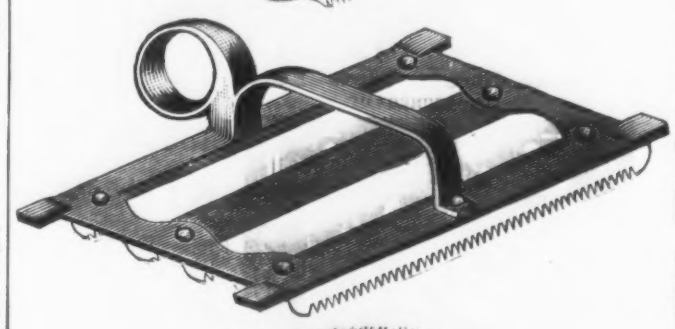
Send for price list. Buffalo, N.Y.

RUSSELL & ERWIN MFG. CO. NEW YORK & PHILADELPHIA AGENTS.

HOTCHKISS

NOVELTY COMB.





Manufactured by

HOTCHKISS' SONS, Bridgeport, Conn.

The Simplest, Neatest and most Durable CURRY COMB ever offered to the trade, affording an easy grasp for the hand, without the use of the ordinary side handle.

Special net prices furnished on application. Office and Sample room with

GRAHAM & HAINES, 88 Chambers St., N. Y.

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Stencil Combinations.

Containing: Stencil Alphabet, Figures, Can Stencil Ink and Brush.

For marking boxes, barrels, bags, and packages for shipment. Printing all manner of showcards, notices, signs, numbers, prices, &c., and other purposes too numerous to mention. Instructive and amusing for boys.

WHOLESALE PRICES.

Size.		Size.	
½ in., per dozen.	$5·00	1⅝ in., per dozen	$10·00
⅞ " "	6·50	2 " "	12·00
1 " "	7·00	2½ " "	18·00
1½ " "	9·00	1⅝ " with lower case..	15·00

An Illustration of sizes sent on application.

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No. 66 Fulton Street, New York.

GET THE BEST.

HALL'S Sudden Grip VISE.

The Quickest,

Most Convenient, and

Most Complete

VISE ever devised.

A Push closes and grips. A pull opens the jaws to any extent. The Swivel is Automatic, will swing on the table to any angle and fasten itself. Made in the best manner of the best material. Send for a Circular. **AGENTS WANTED.** *Address,*

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Manufactured by CHARLES PARKER, Meriden, Conn.

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BAEDER, ADAMSON & CO.,

Manufacturers of

SAND & EMERY PAPER & EMERY CLOTH.

(Also, in Rolls for machine work.)

Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felting for Covering Boilers, Pipes, &c., Cow Hide Whips.

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Forehand & Wadsworth's Double-Action

WROUGHT IRON FRAME.
Cast Steel Barrel and Cylinder.
32, 38 and 41 Cal.

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Manufacturers of Standard and O K Revolvers, Charles Daly Guns. Agents for Wesson & Harrington, J. P. Clabrough & Bro. Importers of **Guns, Gun Material, &c.**
Illustrated Catalogue furnished to only those whom we know to be in the trade.

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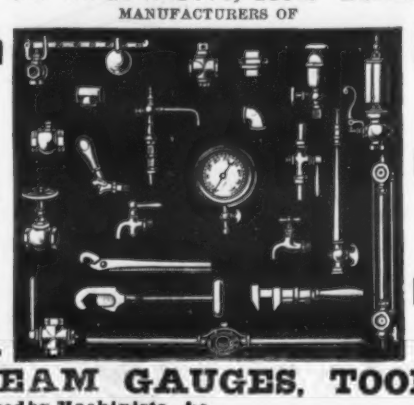
MANUFACTURERS OF

Wrought Iron **PIPE,** Cast Iron **FLANGED PIPE, Cast Iron** RADIATORS and BOILERS.



Brass & Iron **STEAM** Gas & Water **FITTINGS.** PLUMBERS' MATERIALS.

STEAM GAUGES, TOOLS,

And all Supplies used by Machinists, &c.

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MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil
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The Atlantic White Lead and Linseed Oil Company,

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Established A. D., 1777.

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Manufacturers of the well known Brand of
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Pipe, Fittings, &c.

WROUGHT IRON
INDESTRUCTIBLE ENAMELED PIPE

For Water, Gas, Sewage & Soil Pipe.

Manufactured Solely by

NATIONAL TUBE WORKS CO.,

Also Lap Welded Steam & Gas Pipe & Boiler Tubes.
Tubing & Casing for Artesian, Oil & Salt Wells (with Patent Protecting Coupling).
A Specialty made of Large Wrought Iron Lap Welded Tubes, 8 in. to 14 in. diameter.
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For STEAM, WATER and GAS.

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Branches Retorts, &c.
Warren Foundry & Machine Co.,
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GEORGE BARNES & CO.,

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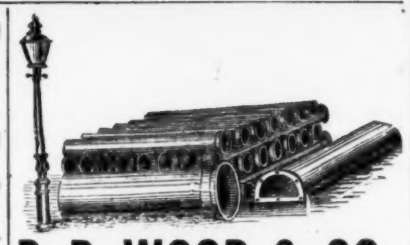
JULIUS FECHTELER, 104 John St., N. Y.
I sell my Carriage Ornaments to dealers only.



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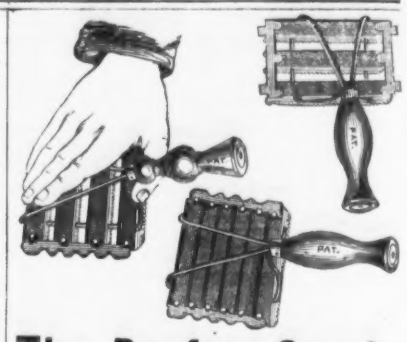
Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.
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382 2d Ave., cor. 22d St., N. Y.

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Sole Manufacturers of

CARR'S Patent Water Closets,

PUMPS,
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BLAKEMORES GRAVITY DOOR ALARM
USE NO SPRING
MANUFACTURED 3425 MARKET ST PHILA PA
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Tubes for Gas, Steam & Water

1-16 to 48 inch. **Gas, Steam Fitters', Plumbers' and Machinists' Supplies.** Boiler Tubes, Iron and Steel Boiler Plates, Rivets, Tools, Etc. Railroad Cars and all kinds of Railway Supplies. Iron and Wood Work for Cars, Bridges and Buildings.

Agent for W. C. ALLISON & SONS.

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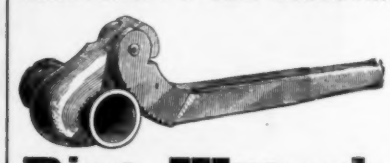
Proprietors and Manufacturers of
WHEATCROFT'S SELF-ADJUSTING



Pipe Wrench,

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Dealers in

STEAM AND GAS FITTERS TOOLS.

RIEHLE BROTHERS,
Office and Works, N. 9th St., above Master, Phila.
Warerooms, 50 & 52 S. 4th St., above Chestnut, Phila.
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SCALES

SCALE AND TESTING MACHINE WORKS
PHILADA ESTABLISHED 1848

"Patented" Furnace Charging Scale.
Double Beam R. R. Track Scale, Compound Parallel Crane Beams, &c. Patented First Power Lever Wagon Scales. Testing Machines any capacity.
Send for Illustrated Price List.

GOLD MEDAL
Non-Extensible Razor Belt.

PATENTED JULY 25, 1871.
RE-ISSUED MAY 13, 1873, and JUNE 9, 1874.

In this Strap the liability of the leather to stretch and become loose and porous is prevented by the a patented non-extensible base, which supports the leather and secures

PERMANENT ELASTICITY.

We make this style with single rod, double rod, and wood frames, and intend that it shall, in quality compare favorably with our other well known brands.

BENJAMIN F. BADGER & SON, Manufacturer,
Badger Place, Charlestown, Mass.

The National Steel Tube Cleaner.

Patented July 28, 1874.

Guaranteed to clean better, last longer and work easier than any in the market. Removes all Carbon and Scale from the Boiler Tubes. Adopted and in use by United States Navy. For sale by dealers.
THE CHALMERS SPENCE CO., Foot East 9th St., N. Y., Agents for the United States.

The Iron Age Directory

and index to Advertisements.

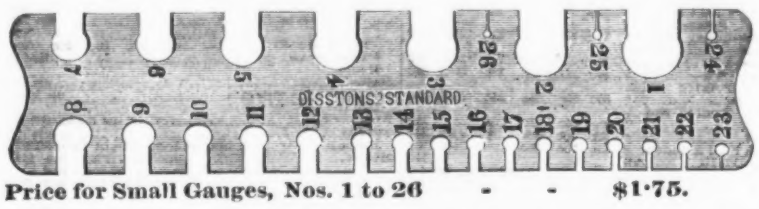
Keystone Saw, Tool, Steel and File Works.

HENRY DISSTON & SONS,

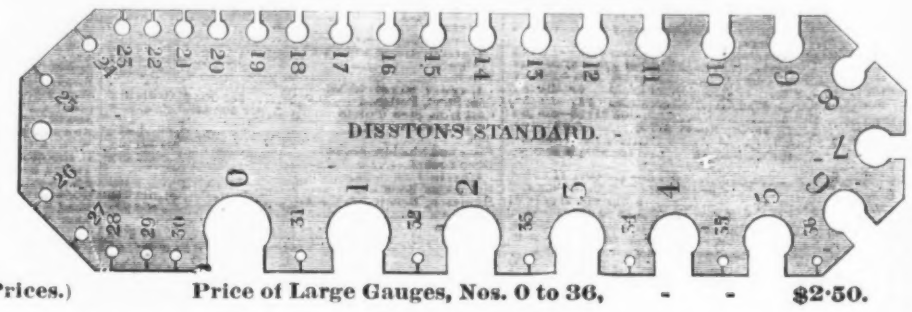
Front and Laurel Streets, Philadelphia.

IMPROVED SCREW DRIVERS.

It is a well known fact that to obtain a Screw Driver of any practical value, is next to impossible—they either break or bend at the point, and, as a rule, they are ground wrong. A Screw Driver ought to be ground concave so as to pull or draw into the incision in the screw—the corners ought to be slightly beveled off which will prevent them breaking and make them fit the screw slot properly. Beside the improvements in the blades, we have on our latest improved Screw Driver a friction cap on the handle, as shown in the cut, the use of which saves a great amount of friction between the handle and the hand. We think we present these goods nearer perfect than ever, and we offer them to the trade at a price that should bring them into general use.



Price for Small Gauges, Nos. 1 to 26 - - $1·75.



(Special Gauges, Special Prices.)

Price of Large Gauges, Nos. 0 to 36, - - $2·50.

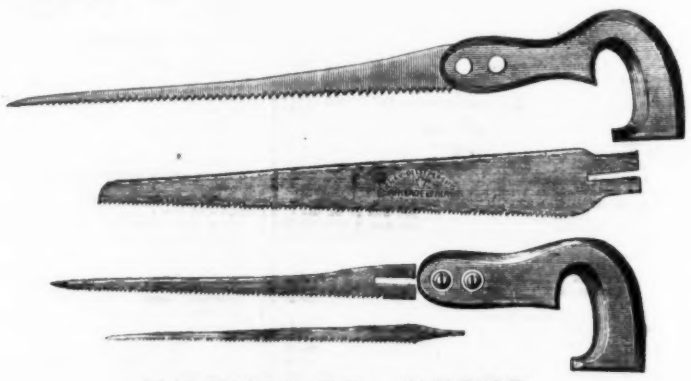
STANDARD WIRE GAUGES. Perfection Attained, Accuracy Guaranteed.

For the past forty years we have had constant trouble with various kinds of so-called Standard Gauges, and have failed to find one in every ten which could be relied on for accuracy. We have repeatedly sent special orders to both English and American makers but have failed to obtain them true to the required standard.

To insure perfect accuracy, it is absolutely requisite that our gauge and that of our customers should be alike, and to this end we have been compelled to enter the field in this delicate branch of manufacture. Our success is complete, and we are making a correct Standard Gauge which we warrant, and sell at a lower price than the English.

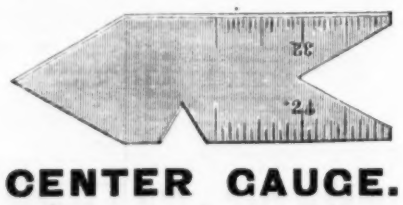
We make them to order in different series of high or low numbers, as the various branches of industry may require. For instance, when the articles to be gauged range between Nos. 0 to 10, the purchaser need not be put to the expense of a gauge running up to No. 36, when most of the numbers will be of no use to him.

Where one or more numbers are being constantly used, they wear away faster in proportion, in which event we recommend that duplicate incisions of each of the most used numbers be made in each gauge.



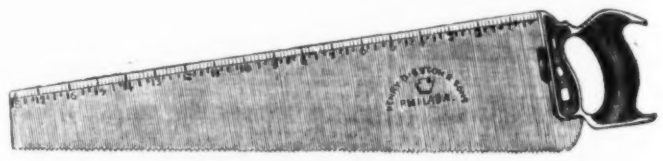
COMPASS SAWS.

Our new Compass Saw is a great improvement on the style in common use—with it the operator need not bring his hand in contact with the saw blade when extra power is required, as provision is allowed in the handle for two full hand grips. They are cheaper than common Compass Saws, when you consider that broken blades can be renewed at a small cost, whereas in the old style, when the blade is broken, the whole tool is useless. The blades are sold in nests or separately, and are interchangeable.



CENTER GAUGE.

A Machinist Center Gauge and Gauge for Grinding and Setting Screw Tools by.



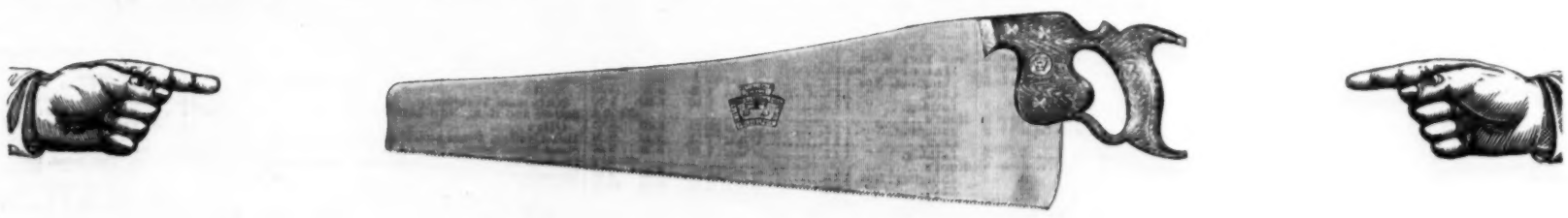
THE COMBINATION SAW.

The Combination Saw, which we illustrate herewith, is an article which fills a long felt want: it combines five tools in one, each tool as light as any one of the tools in separate form. This combination being made entirely of metal, and put together with metal, is always firm and true. No shrinkage can affect it. It is the most complete weather board Saw in the world, and with our little Pocket Level it presents a complete Plumb and Level, a Hand Saw, a good Square, and Rule.

SAW SCREWS.

We make Saw Screws of all sizes and patterns, Solid Head, and low enough in price to meet the trade.

"CENTENNIAL No. 76."



This Saw is ground on the back, to taper gradually from butt to point, being only 26 gauge at the point. By this mode of grinding, the Saw, when tested, makes a complete "whip bend." The handle is apple-wood, oil finish, the screws are flush and polished, and the Saw is superior to any ever offered to the trade in this or any other country at the price. It is the sweetest-cutting, nicest-hanging Saw that can possibly be manufactured, feeling as light as a feather at the point, owing to its peculiar construction. The screws are finished before being put into the handle, and, should they become loose, can be readily tightened with an ordinary screw-driver, and still make a good finish.

New York Wholesale Prices, March 8, 1876.

HARDWARE.

Anvils.
American .... ⅌ ℔ 15c. dis 20 %
Wright's .... ⅌ ℔ gold 10¼c; over 250 ℔s 11c, gold
Armitage's Mouse Hole .... gold 11c
Wilkinson's .... ⅌ ℔ gold 11c
Eagle Anvils (American) .... ⅌ ℔ 10c dis 20 %

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union } $7.75 ⅌ doz
Skeleton Paring, Coring and Slicing .... $8 00 ⅌ doz net
Bay State, Paring, Coring and Slicing .... $15 00 dis 10 %
Climax Slicer 8 00

Ash Sifters.
J. E. Corning's Barrel Head .... dis 10 %
Rival .... ⅌ doz $12·00 net
Square .... per doz $2·50 dis 20 %

Augers and Bits.
Conn. Valley Mfg. Co., Douglass, Ives, Beecher (French, Swift & Co), Griswold, Challenge } 1st quality .... dis 40&10 %
Nobles Mfg. Co. .... dis 40&10 %
Cook's .... dis 40&10 %
Diamond Hardware Co .... dis 25&10&10 %
Snell Mfg. Co .... dis 25 %
Jennings' Bits .... dis 10 %
Lewis' Single Twist Bits .... dis 25 %
Andrews' Bits .... dis 25 %
Griswold's Patent Bits .... dis 30 %
Expansive Bits, Clark's small, $18; large, $26—dis 15 %
" " Ives' .... $20 @ $30—dis 30 %
" " Blake's .... $20—dis 40 %
Hollow Augers, Douglass', Ives', French, Swift & Co. } dis 33⅓ %
" " Bonney's Adjust. ⅌ doz $48—dis 25&10 %
" " Stearns' " ⅌ doz $48—dis 25&10 %
" " Ives' Expansive .... each $4·50—dis 40 %
" " Universal Expansive .... each $4·50—dis 10 %
Gimlet Bits—Screw, $7·50; no screw, $9 .... dis 20&10 %
Double Cut Gimlet Bits, Shepardson's .... dis 30 %
" " Ct. Valley Mfg. Co. .... dis 30&10 %
" " Hartwell's .... dis 50 %
" " Douglass' .... dis 25&10 %
" " Ives' .... dis 30 %
Morse's Bit Stock Drills, List of Jan'y 1, '76 .... dis 25 %
L'Hommedieu's Ship Augers .... dis 20 %
Watrous Ship Augers .... dis 20 %
Vaughan's Post Hole—
6 in. $23 00; 7, 8 and 9 in $25 per doz .... dis 20 %

Awls, Brad Sets, &c.
Awls, Sewing, Common .... per gross $1·20—dis 15 %
" " Best .... per gross $1·60—net
" Shouldered Peg .... per gross 2·25—dis 15 %
" Patent Peg .... per gross ·60—dis 15 %
" Shouldered Brad .... per gross 2·25—dis 15 %
Brad Sets, Aiken's .... per doz $13·88—dis 40 %
" No. 42, $10·50; No. 43, $12·50 .... dis 45&10 %
" Clark's .... dis 50 %
" Stanley's Excelsior .... $18 50—dis 30&10 %

Axes.
Brook's .... per doz $12 00 @ 14 00 net
Blood's .... per doz $15 00 @ 16 50—dis 20 %
Hunt's .... ⅌ doz $12 50 @ 14 00
Collins' .... ⅌ doz 11 00 @ 15 50 net @ dis 5 %
B. Clark's (J. C. W. & Co.) bro'd or red. ⅌ doz $10 00 net
Hurd's .... ⅌ doz 10 00 @ 12 00
Simmons' .... ⅌ doz 11 00 @ 11 50
Morris' .... ⅌ doz 12 00 @ 13 50
Red Jacket .... ⅌ doz 12 00 @ 12 50
Mann's .... ⅌ doz 11 50 @ 13 00
" Double Bitted .... ⅌ doz 21 50 @ 22 00
Underhill's .... ⅌ doz 12 00 @ 13 00
" Crown .... ⅌ doz 12 50 @ 13 50
John Leverett's .... ⅌ doz 12 50 @ 15 50
Ten Eyck .... ⅌ doz $10 50 @ 12 50 net
M. H. Jones & Co .... ⅌ doz 10 50 @ 11 50 net
Nobles Mfg. Co .... per doz $10 50, net
Elephant .... per doz $10 50 @ 11 60 net

Axle Grease.—Frazer's .... ⅌ ℔ 6c.
Balances .... dis 40 %
Bands.—Plated .... new list dis 50&5 %
Iron Rim .... new list dis 25&5 %
Brass (Plated list) .... new list dis 50, 10&5 %
Oroide .... new list dis 50&5 %

Bed Keys.
Gray's Ratchet .... ⅌ doz $4 00, dis 15 %

Bells.
Hand, Light Brass .... dis 70&10 %
" Extra Heavy .... dis 40&10 %
" White Metal .... dis 50&10 %
" Silver Chime .... dis 20&10 %
" Swiss .... dis 25 %
" Globe (Cone's Patent) .... dis 20&10 %
Gong, Abbe's .... dis 20&10 %
" Yankee .... dis 35&10 %
" Barton's .... dis 35 %
Crank, Taylor's .... dis 25&10 %
" Brook's .... dis 50 %
" Cone's .... dis 10 %
" Connel's .... dis 50&10 %
Lever, Sargent's .... dis 50&10&10 %
" Taylor's Bronze or Plated Lever .... net
" Japanned Lever .... dis 25&10 %
" Hart, Bliven & Mead Mfg. Co .... dis 50&10 %
Bull, " " " .... dis 50&10 %
" Brook's .... dis 50 %
" Western .... dis 50&10 %
Call .... dis 15 %
Cow—Common Wrought .... dis 20&10 %
" Western .... dis 30&10 %
" " Sargent's .... dis 50&10&10 %
" Kentucky "Star" .... dis 30&10 %
" " Sargent's .... dis 50&10&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog.
$12·00 10·00 9·00 8·00 6·00 5·00 3·50 2·50 5·00—dis 50 %
" Yaw's Genuine .... dis 35 %
" Texas .... dis 35 %

Bellows.
Blacksmiths', Common, List of Sept. 15 .... dis 20 %
" Extra and Pittsburgh Pattern .... List net
Moulders' .... dis 25 %
Hand Bellows .... dis 10 %

Blind Adjusters.—Domestic .... ⅌ doz $3—dis 20 %

Blind Fasteners.
Mackrell's .... dis 30 %
Van Sand's, No. 2000, $14·00; No. 2??, $10·50 net @ dis 5 %
Washburn's Patent .... ⅌ gross $14 00 dis 5 %
Merriman's .... new list net

Blind Staples.
Boardman's Patent, ⅜ in. and larger .... ⅌ ℔ 37 c
" ⅜ in .... " 42 c

Blocks.
Differential Pulley Blocks .... dis 25 %
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list .... dis 30&10 %
Burr's .... dis 10 %
Stanley Rule and Level Co .... dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c .... dis 60&10 %
Cast Iron Chain .... dis 60&10&10 %
Wrought Iron Barrel .... dis 50, 10&10 %
" " Square .... dis 50, 10&10 %
" " Shutter .... dis 60&10 %
Wrought Iron Flush, Stanley's .... dis 15&10 %
" " " Sargent's .... dis 50&10&10 %
Carriage and Tire, Common .... dis 75 %
" " " Norway Iron .... dis 50&10 %
" " " R. B. & W. .... (old list) dis 65 %
" " " Philadelphia .... dis 60&5 %
" " " Shelton's .... (old list) dis 50&10 %
Union Nut Company, old list .... dis 65&5 %
Stove .... dis 30 %
" R. B. & W. .... dis 35 %
" Shelton's Shaved Head .... dis 25 %
Machine .... dis 60
Bolt Ends .... dis 60

Borax .... 14 @ 15c. ⅌ ℔

Boring Machines.

	Upright.	Angular.
ovey's, no Augers	$3·15	$4·00 net
" with Augers	5·00	6·00 net
Douglass', no Augers	5·50	7·50 dis 40 %
" with Augers	9·00	11·00 dis 40 %
Parr's, no Augers	5·00	7·50 dis 30 %
" with Augers	7·50	10·00 dis 30 %
Kellogg's, no Augers	5·25	6·75 dis 15 %
Sweets' "	3·25	4·00 net
" with Augers	5·00	6·00 net
Snell's, "	4·75	6·25 dis 30 %
Phillips', with Augers		16·00 dis 25 %

Mortising Machines, $30·00 each .... dis 20 %

Bow Pins.
Union Nut Co. .... new list dis 50&10&5 %
Hotchkiss' .... dis 50 @ 55 %
Humason, Beckley & Co.'s .... dis 50&10 %
Sargent & Co.'s .... dis 50&10&10 %

Braces.
Barber's Patent .... dis 40&5 %
Q. S. Backus .... dis 40&10 %
Wilson Mfg. Co. .... dis 10 %
Spofford's Patent .... dis 50 %
Noble's Patent .... dis 40&5 %
Ives' Novelty .... dis 40&7½&10 %
" Hamden .... dis 25&10 %
Common Ball (American) .... dis 25 %

Brackets.—Shelf .... dis 60&10 @ 65&10 %
Bright Wire Goods .... dis 65&10&10 %
Bull Rings.—Union Nut Co .... dis 50&20 %
Sargent's .... dis 60&10 %
Hotchkiss' .... 2½ in., $2·25 net
Humason, Beckley & Co.'s .... dis 50&10&5 %

Bung Hole Borers.
Common and Ring .... dis 20&10 %
Ives' Tap Borers .... dis 10&10 @ 25 %
Enterprise Mfg. Co .... dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co .... dis 20&10 %
Bradley's .... dis 25 %
Beatty's .... dis 20 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

Hart Mfg. Co .... dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$34·25	$38·75	$43·25	$48·50	$54·00

Butts.
Wrought Brass .... dis 30 %
Cast Brass .... dis 30 %

COMMON CAST, NOT DRILLED.
Fast Joint, Narrow .... New list July dis 30&10 %
" Broad .... " dis 40&10 %
" " Jap'd .... " dis 35&10 %
Loose Joint, Narrow and Broad .... " dis 50&10 %
" " " Jap'd .... " dis 45&10 %
Parliament Butts & Mayer's Hinges .... " dis 40&10 %
Loose Pin .... " dis 45&10 %
" Japanned .... " dis 55&10 %
Loose Pin, Jap'd, Plated Tips .... " dis 50&10 %

Drilled and Wired.
Fast Joint, Narrow .... New list July 1, dis 25&10 %
" Broad .... " dis 35&10 %
Fast Joint, Broad, Japanned, New list July 1, dis 30&10 %
Loose Joint .... new list July 1, dis 45&10 %
" Japanned .... " dis 45&10 %
Parliament & Mayer's Hinges .... " dis 35&10 %
Loose Pin .... " dis 40&10 %
" Japanned .... " dis 50&10 %
" " Plated Tips .... " dis 45&10 %

Union Mfg. Co.'s Fancy Butts.—
Figured Enameled Loose Joint .... dis 55&10 %
Nickel Plated " .... dis 33⅓&10 %
Boston Finish, Plain .... dis 80&5 %
" " with Iron Acorns .... dis 75&5 %
" " with Sil'd " .... dis 65&5 %

WROUGHT IRON.
Fast Joint, Narrow .... dis 30&5
" Lt. Narrow .... dis 25&5
" Broad .... dis 35&5
Loose Joint, Broad .... dis 40&5
Table Butts, Back Flaps, &c .... dis 30&5
Inside Blind, Regular .... dis 30&5
" " Light .... dis 40&5
Loose Pin Wrt .... dis 35&5
Am. Spiral Spring Butt Co. list May 1st .... dis 20 %
Union Spring Hinge Co .... dis 20 %
Blind Butts, Parker .... dis 65&10 %
" Palmer .... dis 40 %
" Seymour .... dis 60&10 %
" Shepard .... dis 60&10&5 %
" Lull & Porter .... dis 60 %
" Nicholson .... dis 45&10 %
" Huffer .... dis 33⅓&10 %
" Garretson, No. 1 .... dis 65 %
" Clark's, Nos. 1, 3 and 5 .... dis 65&10 %
" Clark's No. 20 .... dis 70&10 %
" " Nos. 2, 4, 4½, 6, 8, 10 .... dis 45 %

Can Openers.
Messenger's Comet .... per doz $3·00 dis 20 %
American .... per doz 2·25 dis 50 %
Lyman's .... per doz 3·75 dis 20 %
No. 4, French .... per doz 2·25 dis 50 %
No. 5, Iron Handle .... per doz 2·25 dis 50 %
Sprague's .... Nos. 1 2 3 4
Per doz $4·00 4·50 5·00 9·00 dis 55&10 %
Star .... per doz $5·00 dis 20&10 %
Eureka .... per doz $3·50 net
Sardine Scissors .... per doz $7·00 dis 50 %

Caps—Percussion, per 1000.
G. D. .... 37 @ 40c
Ely's E. B. .... 1-4s. 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's .... 1-10s 80c gold

Carpet Sweepers.
Union .... each $2 75 net
Welcome .... each 2 75 net

Cartridges.—Metallic .... dis 57½ @ 60 %
Cards.—Horse and Curry .... dis 30&10 %
Cotton .... dis 10&10 %
Wool .... dis 15&10 %

Carpet Stretchers.
Cast Steel, Polished .... per doz $5·00 dis 30 %
Cast Iron, Stee. Points .... per doz $2·00 dis 45&5 %

Casters.
Bed .... dis 30&10 @ 40 %
Plate and Shallow Socket .... dis 40&10 %
Deep Socket .... dis 40 %

Cattle Leaders.
Hotchkiss' Sons' .... net
Humason, Beckley & Co.'s .... dis 30 %
Sargent's .... dis 60&10 %

Chain.
English Coil .... net gold
⅌ ℔ 11¼ 8⅜ 7¾ 7½ 7¼ 7c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2 .... by the cask, ⅌ pair, gold 50 @ 52c
Trace, 7-10-2 .... by the cask, ⅌ pair gold. 55 @ 57c
German Halter Chain .... dis 25 % gold
German Coil .... dis 25 % gold
Galvanized Pump Chain .... ⅌ ℔ 13c
Jack Chain, Iron .... dis 50&10 %
" Brass .... dis 40&10 %

Chalk.
White .... ⅌ gross, 57c net
Red .... ⅌ gross, 90c net
Blue .... ⅌ gross, $1·00 net
White Crayons .... ⅌ gross, 16½c net

Chisels.
Socket Framing, Douglass, Extra .... dis 60&10 %
" " Crossman .... dis 50&15&10 %
" " Buck Bros .... new list dis 15 @ 17½ %
" " Hart Mfg. Co .... dis 60&10 %
" " Merrill .... dis 60&10 %
" Firmers, Douglass, Extra .... dis 60&10 %
" " Crossman .... dis 50&10&10 %
" " Buck Bros .... new list dis 15 @ 17½ %
" " Hart Mfg Co .... dis 60&5 %
" " Merrill .... dis 60 %
Socket Corner .... dis 60&10 %
Tanged Firmers .... dis 40 %
" " Butcher's .... $5·50 to £ gold
" " Newbould's .... $5·50 to £ gold
" " Spear & Jackson's .... $5·00 to £ gold
" " Buck Bros (Shank) .... $5·50 to £ gold

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron .... dis 25 %
" Adjustable, Gray's .... dis 20 %
" " Lambert's .... dis 25 %
" " Snow's .... dis 40&5 %
" " Hammer's .... dis 10 %
" Cabinet, Sargent's .... dis 60&10 %
" Carriage Makers', Sargent's .... dis 55&10 %
Saw Clamps .... see vises

Clips, Axle.
Norway or Best .... dis 40 %
Superior .... dis 50 @ 55 %

Coal Shovels.

Wrought Iron.	Nos. 1	2	
Long Wrt. H'dles..per gross	$15·00	18·00	dis 25 %
Short "	12·00	14·00	dis 25 %
Wood Handles "	12·00	14·00	dis 25 %
Gem (Edgar's Pat.) "	15·00	18·00	dis 25 @ 30 %

Cast Iron, Iron Handle .... per doz, 75 @ 80c. net
" Wood Handle .... per doz, $1·00 net

Coal Hods.

Inch.	14	15	16	17	18	
Regular, Jap'd...per doz	$12·00	12·75	13·50	15·50	18·00	dis 60&10 %
Regular, Gal'd... "	15·00	16·00	17·50	19·00	22·50	dis 50&10 %
Ladies' Favorite, Jap'd. ⅌ doz	15·00	16·50	18·00	20·00		dis 50 %
Ladies' Favorite, Galvanized "	19·00	20·00	22·00	25·00		dis 45 %

Funnel Hods.—	Nos. 15	16	17	
Oriental, Japanned ⅌ doz.	$16·50	18·00	20·00	dis 50 %
" Galvanized "	21·50	22·50	24·00	dis 40 %
Morning Glory, Jap'd. "	16·50	18·00	20·00	dis 50 %
" " Gal'd. "	21·00	22·50	24·00	dis 40 %
Iron Clad, Jap'd "		21·50		dis 60&10 %
" " Gal'd "		22·50		dis 50&10 %

Sidney Shepard & Co.'s new list .... dis 10 %
Cockeyes .... 1¼ in., 28c.; 1½ in., 33c.; 1¾ in., 37c. net

Cocks.
Brass Racking .... dis 40 %
Lock and Globe .... dis 40 %
Lever Bibbs .... dis 40 %
Ale and Beer .... dis 25&10 %

Coffee Mills.
Board and Box .... dis 15 @ 20 %
Brighton .... dis 20 %
Increase Wilson's .... dis 20 %
Selsor's Pat .... $9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.) .... dis 20 %
French Steel .... dis 20 %
The Swift .... dis 20 %

Compasses and Dividers.
Bemis & Call Co.'s .... dis 35&10 %
Cook's .... dis 15 %
Excelsior .... dis 40 %
Peck Stow & Wilcox .... dis 25 %
Miller's Patent .... dis 25&10 %

Coopers' Tools.
Bradley's .... dis 15 @ 20 %
Chas. E. Little .... dis 20 @ 25 %
Swan & Brombacher .... dis 15 @ 20 %

Corkscrews .... dis 25 %

Corn Knives and Cutters.
Bradley's .... dis 10 %

Crow Bars.
Cast Steel .... ⅌ ℔ 11c. net
Iron, steel points .... ⅌ ℔ 5c

Crucibles.—Gautier & Co .... ⅌ No. 5½c

Curling Irons, &c.
¼, ⅜, ½ in., $1·80, $2·00, $2·40 .... dis 10 %
Curling Tongs .... ⅌ doz $6 50—dis 15 %
Pinching Irons .... ⅌ doz 7 50—dis 20 %

Curry Combs.
Curry Comb Mfg. Co. .... dis 25&10 %
Hotchkiss' & Kellogg's, Iron & Brass, old list .... dis 40 %
Fitch's (List of No 240, $1) .... dis 25&10 %
Rubber .... ⅌ doz, $9·00—dis 15 %
Wood Tooth (Fuller Bros.) .... per doz $2·25 net

Curtain Pins.—Silvered Glass .... new list dis 15 %

Cutlery.
American Table { Meriden } New list Jan. '75, dis 25 %
American Pocket { Cutlery Co } .... dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co .... dis 20&10 %
Am. Miller Bro.'s Cutlery Co .... dis 25 %
Naugatuck Cutlery Co .... dis 25 %

Dippers.
Britannia .... per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain .... per doz $3·25—dis 30 %
" Rimmed .... per doz 3·75—dis 30 %

Dog Collars.
Embossed Gilt .... dis 20 %
Leather .... dis 30 %
Brass .... dis 25 %

Door Springs.
Rod, Torrey's .... ⅌ doz $2·50 net
" Gray's .... ⅌ doz $2·50 net
" Johnson's .... ⅌ doz $3·00 net
Coil Springs, Gem .... Nos. 1 2 3
Per dozen .... $8·50 $2·50 $2·00, dis 10 %

Challenge—	Nos. 9	7	6	
Japanned .... per doz	$2·00	2·50	3·50	} dis 10 %
Coppered .... per doz	4·00	4·50	5·00	
Galvanized .... per doz	3·50	4·00	4·50	
Nickeled .... per doz	5·50	6·00	7·00	

Philadelphia .... 6 in., $5·00; 8 in, $7·00 dis 15 %
Barker's Concealed .... dis 15 %

Drawing Knives.
Crossman's No. 1 .... dis 50&15&10 %
Douglass, Extra .... dis 60&10 %
Hart Mfg. Co., No. 1 .... dis 60 %
Merrill .... dis 60&10 %
Nobles Mfg. Co .... dis 15 %
Bradley's .... dis 25 %
Adjustable Handle .... dis 15 %

Drills and Drill Stocks.
Blacksmiths' .... each $6 60 net
" Self-Feeding .... each $8 00 net
Breast, P. S. & W. .... dis 45 %
Breast, Aiken's .... dis 25&10 %
" Hotchkiss .... dis 10 %
" Wilson's .... dis 10 %
" Miller's Falls .... dis 25 %
Ratchet, Merrill's .... dis 20 %
" Ingersoll's (old list) .... dis 35 %
" Whitney's .... dis 20 %
Ratchet, Weston's .... dis 20 %
" Moore's Triple Action .... dis 20 @ 25 %
Wilson's Drill Stocks .... dis 10 %
Automatic Boring Tools .... each $2·75—dis 20 %

Drill Chucks.
Danbury .... each 10·00, dis 20 @ 25 %
Morse's Beach Patent .... dis 30 %
" Adjustable .... each $10·00, dis 30 %

Egg Beaters.
Monroe's .... 8 in. 10 in.
Per doz $8·00 9·00 .... dis 10 %
Dover .... ⅌ doz $5·00—dis 20 %
National .... ⅌ doz $4·50—dis 20 %
Peerless .... ⅌ doz $5·00—net

Emery.
Genuine Chester—Regular Nos .... ⅌ ℔ 6c } dis 10 %
" Flour and FF .... ⅌ ℔ 4c }
Washington Mills—Regular Nos .... ⅌ ℔ 8c
" Flour .... ⅌ ℔ 5c
Wellington Mills, Grain .... ⅌ ℔ 10c. net
" " Flour .... ⅌ ℔ 8c. net

Enameled and Tinned Ware.
Kettles .... dis 30 @ 40 %
Sauce Pans .... dis 25 %
Glue Kettles .... dis 25 %
Tinned Saucepans .... dis 25 %

Escutcheons.
Door Lock .... Same discounts as Door Locks
Brass Thread .... dis 60&10 %
Wood .... dis 25 %

Faucets.
Fenn's .... dis 50 %
" Cork Stops .... dis 40 %
Star .... dis 55&10 %
Frary's Patent Petroleum .... dis 15&10 %
Wood and Metallic .... dis 40 %
Wood, Cork Lined .... dis 65 @ 65&5 %
Enterprise Mfg. Co., Self-Measuring .... dis 20 %

Felloe Plates .... ⅌ ℔ 15c; dis 25&10 %

Files.
American File Co .... $5 00 to £ currency—dis 20 %
Arcade File Works .... $5·00 to £ currency
Auburn File Works .... $5 00 to £ currency
Nicholson .... new list, Jan. 1, 1875, net
C. B. Paul's .... $5 00 to £ currency
Heller & Bros .... $5 00 to £ currency
Johnson & Bro .... $5 00 to £ currency
"Western" .... 5 00 to £ net
Wheeler, Clemson & Co .... $5 00 to £ currency
Rothery's .... $5 to £ currency
J. & Riley Carr .... 5 25 to £ gold
" " Horse Rasps .... 5 50 to £ gold
Stubs' .... 8 50 @ 9 00 to £ gold
Butcher's .... 5 25 to £ gold
Walter Spencer & Co.'s "Diamond" .... 5 00 to £ gold
Spear & Jackson's .... 5 00 to £ gold
Jowitt's .... 4 50 to £ gold
Newbould's .... 5 25 to £ gold
W. K. & C. Peace's "Imperial" .... 5 25 to £ gold
R. Ibbotson .... 5 00 to £ gold
Turton Bros. & Matthews .... $5 50 to £ currency
Fisher's .... 4 75 to £ gold
Goodlad's .... 4 00 to £ gold
Moss & Gamble .... 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps .... 5 25 to £ gold
"Philo Sheffield." P. T. Co .... 5 00 to £ gold
Limet & Co. (French) .... 4 25 to £ gold

Fluting Machines.
Mrs. Coles' Pony .. 4 in., $4·75; 5 in., $5; 6 in .. 5·50; 7 in., $6
Knox, 6-inch Rolls .... $6 25, dis 10 %
" 8 " " .... $8 00, dis 10 %
O. K. .... 6 50 each net
Peerless, 4-inch Rolls .... 4 00 each net
" 5 " " .... 4 75 each net
Excelsior, No. 1 .... 4 75 each net
" No. 2 .... 6 50 each net
Diamond .... 7 50 each net
Champion, 6 inch rolls .... 6 00 each net
" 4 inch rolls .... 5 00 each net
Empire .... 4 00 each net
Eureka, No. 1, 7-inch Roll .... 8 00 each net
" No. 2, 5-inch Roll .... 6 00 each net
Defiance .... 4 in., $3·50; 6 in., $4·00; 8 in., $6·50 each net
K. F. M., 4½-inch Roll .... 5 50 each dis 15 %
" 6-inch Roll .... 6 00 each dis 15 %
Myers Fashion Fluter, 4½-inch Rolls .... 2 75 each net
" Convex Brass Fluter, Sad Iron attachment .... per doz $15·00
Domestic Fluter .... $1·50 each net
Geneva Hand Fluter .... $15 00 per doz net

Fluting Scissors .... dis 25&10 %

Forges.
"Empire" (W. P. Kellogg & Co.) .... dis 20 %

Forks.
Hay, Manure & Spading .... dis 33⅓ %
Plated A 1 .... dis 40 %

Fry Pans.
Burnished, P. S. & W., new list .... dis 40 %

⅌ doz	$3·00	3·75	4·25	4·75	5·25	6·00	7·00	8·00	9·00
No.	0	1	2	3	4	5	6	7	8

Gauges.
Marking .... dis 45&10 %
Wire .... dis 10 %
" Smith's Patent .... per doz $18·00, dis 40 %

Gimlets.
Nail and Spike .... dis 25&10 %
"Bee" Gimlets .... per gross, $12·00, dis 30 %
Double Cut, Shepardson's .... dis 20 %
" " Hartwell's .... dis 40 %
" " Ives' .... dis 25 %
" " Douglass' .... dis 25&10 %

Glue Pots.
Tinned and Enameled .... dis 25 %
Family, Howe's "Eureka" .... dis 25 %
" L. F. & C.'s "Handy" .... dis 25 %

Grind Stone Fixtures
Sargent's Patent .... dis 65&10 %
Reading Hardware Co .... dis 70&10 %
J. F. Green & Bro .... dis 20 %
Hart Mfg. Co.'s .... dis 60&5&10 %
Rick Bros .... dis 45&5 %

Hammers.
Emmet Hammer Co.'s Handled .... dis 25 %
" " Sledge & Stone. ⅌ ℔ 40c.; dis 40 %
Humason & Beckley Mfg. Co .... dis 16⅔&10 %
Maydole's .... dis 12 %
Henry Hammonds' (Maydole's List) .... dis 12 %
Cheney's .... net @ dis 5 %
Verree .... dis 5 %
Yerks & Plumb .... dis 20 %
Magnetic Tack .... dis 25&10 %
Warner & Noble's .... dis 10 %

Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair } dis 25 %
" Leg Irons $6 50 per pair }
Providence Tool Co.'s Hand Cuffs $15 per doz } dis 10 %
" " Leg Irons 25 " }

Handles.
Door or Thumb Latches—

Nos.	0	1	2	3	4
Per doz	$·80	1·00	1·18	1·35	1·50—dis 60&10 %

Roggin's Latches .... 35c. @ 40c. net
Bronzed Iron Drop Latches .... per doz $1·00 @ 1·25 net
Wrought Chest .... dis 60&10 %
Surface Chest .... dis 65&10&10 %
Flush Chest .... dis 60&10&10 %
Lifting .... dis 60&10 %
Coffin .... dis 50&10 @ 60&10 %
Saw and Plane .... dis 25&10 %
Boynton's Patent X Cut .... dis 10&5 %
" Centennial X Cut .... dis 10&5 %
" Ice Saw, Wrought Iron .... each $1 00 net
Hammer and Hatchet .... dis 10 %
N. Carolina Handle Co .... dis 15 %
Brad Awl .... per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 20&10 %
" " " large " 6 50—dis 20&10 %
Apple " " ass'td " 6 00—dis 20&10 %
" " " large " 7 50—dis 20&10 %
Socket " " ass'td " 3 50—dis 20&10 %
" Framing " " " 7 00—dis 20&10 %
File .... " " 4 00—dis 20&10 %
Auger .... " " 6 50—dis 20&10 %
" large " 8 00—dis 20&10 %
Patent Auger, Ives' .... dis 25&10 %
" " Douglass' .... per set $1 25—dis 10 %
" " Swan's .... per set $1 00—dis 20&10 %

Hangers.
Barn Door .... dis 65&10 %
"Anti-Friction" No. 1, $1·25; No. 2, $1·50 ⅌ pr .... dis 40 %
Novelty .... dis 40 %
Challenge .... dis 40 %

Harness Snaps.
Henshaw's .... dis 25&10 %
Judd's .... dis 40 %
Fitch's (Bristol) .... dis 30 %
Hotchkiss' .... dis 10 %
Andrews' .... dis 25 %
Sargent's .... dis 50&10 %
New York Wire .... dis 20&20 %

Hatchets.—Isaiah Blood .... dis 15 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$7 25	8 00	8 75
Claw,	1 2 3	⅌ doz	7 75	8 50	9 25
Lathing,	1 2 3	⅌ doz	7 50	8 00	8 50

Hunt's .... dis 15 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$7 25	8 00	8 75
Claw,	1 2 3	⅌ doz	7 75	8 50	9 25
Lathing,	1 2 3	⅌ doz	7 50	8 25	9 00

Hurd's .... dis 30 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$8 00	8 50	9 00
Claw,	1 2 3	⅌ doz	9 00	9 50	10 00
Lathing,	1 2 3	⅌ doz	8 00	8 50	9 00

Newark's Edge Tool Co.'s .... dis 25 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$6 50	7 00	7 50
Claw,	1 2 3	⅌ doz	7 25	7 75	8 25
Lathing,	1 2 3	⅌ doz	6 50	7 00	7 50

Yerkes & Plumb .... dis 30 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$7 00	7 50	8 00
Claw,	1 2 3	⅌ doz	7 50	8 00	8 50
Lathing,	1 2 3	⅌ doz	7 00	7 50	8 00

Simmon's .... dis 20 %

	Nos.					
Shingling,	0 1 2 3	⅌ doz	$7 50	8 00	8 50	9 00
Claw,	1 2 3	⅌ doz		9 00	9 50	10 00
Lathing,	1 2 3	⅌ doz		8 00	8 50	9 00
Broad,	1 2 3	⅌ doz		9 00	10 00	12 00
"	4 5 6	⅌ doz		14 00	16 00	18 00
"	7 8	⅌ doz		20 00	22 00	

Elephant .... dis 30 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$8 00	8 50	9 00
Claw,	1 2 3	⅌ doz	9 00	9 50	10 00
Lathing,	1 2 3	⅌ doz	8 00	8 50	9 00

J. P. Verree & Co .... dis 5 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$7 30	7 50	8 00
Claw,	1 2 3	⅌ doz	7 50	8 00	8 50
Lathing,	1 2 3	⅌ doz	7 00	7 50	8 00

Underhill's .... dis 10 %

	Nos.				
Shingling,	1 2 3	⅌ doz	7 25	8 00	8 75
Claw,	1 2 3	⅌ doz	7 75	8 50	9 25
Lathing,	1 2 3	⅌ doz	12 00	11 00	13 00

M. H. Jones & Co .... dis 25 %

	Nos.				
Shingling,	1 2 3	⅌ doz	$8 00	8 50	9 00
Claw,	1 2 3	⅌ doz	9 00	9 50	10 00
Lathing,	1 2 3	⅌ doz	8 00	8 70	9 00

Hay Knives.—"Lightning" .... per doz $30·00 net

Hinges.
Gate, Western .... ⅌ doz $6·25—dis 60&10 %
" N. E. .... ⅌ doz 11·25—dis 60&10&10 %
" N. Y. State .... ⅌ doz 7·20—dis 60&10 %
Rolled Plate .... dis 65&10 %
" Raised .... dis 65&10 %
Wrought Strap and T .... dis 55 %
Providence Plate. { 6 and 8 in. 11c ⅌ ℔; over 8 in. 9½c ⅌ ℔ } .... dis 30 %
Screw Hook and Strap .... { 8, 10, 12 in. 6½c; 14 to 36 in. 5½c } .... net
Heavy Welded Hook .... { 8 to 12 in. 6½c; 14 in & up, 6c } .... net
Screw Hook and Eye .... { ⅝ to 1 in., 8½c; ½ in. 9½c; ⅜ in. 11½c } .... net

Hoes.
Solid Shank, C. S. .... ⅌ doz $8 00—dis 30 %
Socket .... ⅌ doz 9 00—dis 30 %
Riveted Eye .... ⅌ doz 5 00—dis 30 %
Grub .... dis 25 %
Planters .... dis 15 @ 20 %
Scovill Pattern .... dis 10 %
Lane's C. E. Cresent, American Pattern .... dis 5 %
" " " Scovil Pattern .... net

Hooks.
Bird Cage .... dis 60&10 @ 70&10 %
Cotton .... dis 50 %
Belt .... dis 55 @ 60 %
Bench—Hotchkiss' $5 00 ⅌ doz .... dis 10 %
" Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" McGill's .... $3 00 per doz, dis 10 %
" Skinner's .... per doz $6·25, dis 20 %
Clothes Line, Hart's list .... dis 60&10&5&10 %
" " Sargent's list .... dis 60&10&10 %
" " Reading list .... dis 35&10 %
Ceiling. Harness. { Hart's list .... dis 60&10&10 %
{ Sargent's list .... dis 60&5&10 %
{ Reading list .... dis 35&10 %
Coat and Hat, Hart's list .... dis 60&10&10 %
" " Sargent's list .... dis 60&10&10 %
" " Reading .... dis 35&10 %
Wrought Staples and Hooks and Staples .... dis 75 %
Wire Screw Hooks and Eyes .... dis 65&10&10 %
Grass .... dis 20 %
Whiffletree—Patent .... dis 33⅓ %
Hooks and Eyes—Malleable Iron .... dis 60&10&10 %
" " Brass .... dis 60&10&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Ausable	⅌ ℔	30c	27c	25c	24c	23c	22c
" P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
" " & Blued	"	31c	28c	26c	25c	24c	23c
Cortland	"	29c	26c	24c	23c	22c	21c
Buffalo Forged	"	31c	28c	26c	25c	24c	23c
Globe, P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin	"	29c	25c	23c	24c	21c	20c
National, Pointed and Polished. Ex. Fin	"	30c	27c	25c	24c	23c	22c
Perkin's P't'd—Black	"	29c	25c	23c	22c	21c	20c
Perkins' Pointed and Polished	"	30c	26c	24c	23c	22c	21c
Perkins' Pointed and Blued	"	30c	26c	24c	23c	22c	21c
Putnam	"	32c	28c	26c	25c	24c	23c
Vulcan, P't'd & Blued	"	31c	28c	26c	25c	24c	23c

Star Brand, 16c.; Morgan 14c
Putnam .... 2000 lbs., dis 5 %
Ausable, National and New London .... 1000 lbs., dis 5 %
Perkins' and Vulcan .... 1000 lbs., dis 7½ %
Perkins', Vulcan and Globe .... 500 lbs., dis 5 %

Horse Shoes.
Burden .... ⅌ keg, $4·62½
R. I. Horse Shoe Co., Perkins Pattern .... ⅌ keg, 4·75
" " R. I. Pattern .... ⅌ keg, 5·00
Mule Shoes .... ⅌ keg, 5·75
Perkins' Snow .... ⅌ keg, 5·75
Boston Rolling Mills Hand Made .... ⅌ ℔ 8c

Kettles.
Brass .... ⅌ ℔ 45c net
Enameled .... dis 30 @ 40 %

Knives.
Ames' Butcher Knives .... dis 20 %
" Shoe " .... dis 15 %
" Bread " .... ⅌ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's" .... dis 25 %
Table and Pocket .... See Cutlery

Knobs.
Carriage (Jap'd 80 cents per gross) .... dis 60&10 %
Base—Common .... net
" Plush Tip .... dis 10 %
" Elastic End, No. 8 .... dis 55 %
Door, Mineral .... ⅌ doz $2·25 }
" Por. Jap'd .... ⅌ doz 3·00 } .... dis 40&5 %
" " Plated .... ⅌ doz 7·00 } & 2 % for cash
" " Por .... ⅌ doz 7·50 }
Furniture, Plain .... 75c gross inch, dis 10 %

Ladles.
Melting, Hart's .... dis 55&10 %
" Sargent's .... dis 50&10 %
" Reading .... dis 15&10 %
" Monroe's Patent .... per doz $4·00 dis 20 %

Lanterns.
Tubular .... No. 0, $11·00; No. 1, $14·00 net
Peerless .... No. 5, per doz $11·75—dis 10&10 %
Brady's Patent .... dis 15 %
Ætna .... dis 10 & 10 %
Yankee .... dis 10 & 10 %
De Beque .... dis 10 & 10 %
Police, Small .... per doz $7·50 net

Lard Presses.
Draw Cut, 14 inch .... each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined .... per doz $7 00, dis 15 %
Eureka, Tinned .... per doz, $10·00 dis 10 %
Dunlap's Improved .... per doz $6·00 net

Lines.
Linen Fish .... dis 20 %
Cotton Chalk .... dis 40 @ 45 %
Sil. Lake Chalk .... Nos. 0, 1, 2, 3, $6, 6·50, 7, 7·50, dis 20 %
Mason's .... dis 20 %

Locks and Latches.
Cabinet—Gaylord .... dis 25 %
" Eagle .... dis 22 %
Trunk " .... dis 25 %
Langstroth & Crane, Round Key .... dis 40 %
" " Flat Key .... dis 33⅓ %
Barnes & Deitz, Flat Key .... dis 25 %
Yale Lock Co., Flat Key .... dis 40 %
Sargent & Greenleaf, Flat Key .... dis 20 %
Continental .... dis 25 %
Shepardson's .... dis 20 %
American Lock Co .... dis 33⅓ %
Plate .... new list dis 40&2 %
Trenton, Branford, Norwich, Russell & Erwin, Norwalk, Nashua, Mallory, Wheeler & Co., P. & F. Corbin, Parker & Whipple, Jacobus & Nimick Mfg. Co. } .... dis 40&5 % .... and 2 % for cash
Padlocks, Russell & Erwin; " Mallory, Wheeler & Co.; " Wm. Wilcox & Co. } .... dis 40&5 % .... and 2 % for cash
" Romer's .... dis 15 %
" Vulcan Hardware Co .... dis 20 %
" New York Lock Co .... dis 20 %
" J. H. McWilliams .... dis 5 %
" Barnes & Deitz .... dis 25 %
" D. K. Miller Lock Co .... dis 30&10 %
" Penn Lock Works .... dis 20 %

Mallets.—Hickory and Lignumvitæ .... dis 20 %

Meat Cutters.
Dixon's (P. S. & W.). Nos. 1 2 3 4
⅌ doz. $14 00 $17 00 $19 00 $30 00 dis 25 %
Miles Challenge .... Nos 1 2 3
⅌ doz. $22·00 $30·00 $40 00—dis 30 %
Perry's (P. S. & W.) .... Nos. 200 300 400
⅌ doz. $22·00 $27·00 $40·00—dis 25 %
Woodruff's (P. S. & W.) .... Nos. 100 150
⅌ doz. $15·00 $18·00—dis 25 %
Hales' .... Nos. 11 12 13
⅌ doz. $27·00 $33·00 $42·00—dis 35&2 %
Draw Cut .... Nos. 5 6 7
Each $76·00 $90·00 $250 00—dis 20 %
American .... dis 25 @ 25&5 %

No.	1	2	2½	3	4	B	5
Each	$6·00	$9·00	$12·00	$15·00	$30·00	$60·00	$75·00

Molasses Gates.
Stebbins' .... dis 62½&10 %
" Tinned ends .... dis 40&10 %
Bush's .... dis 20 %
Lincoln's .... dis 50&10 %
Weed's .... dis 15 %

Mortars and Pestles.
Iron .... net

Nail Pullers.
Taft's .... per doz $24·00 net

Nails .... See Trade Report

Nuts and Washers.
Square and Hex., New List March 1, '76 .... 7c off list

Oilers.
Miller's Zinc, Brass and Copper .... dis 40 @ 45 %
Sheet Metal Screw, Zinc, Brass and Copper .... dis 40 @ 45 %
Olmsted's .... dis 25&10 %
Broughton's .... dis 25&10 %
Malleable .... per doz $5 00 dis 10 %
Prior's Patent or "Paragon" .... dis 40 %

Ox Shoes.
Concave .... ⅌ ℔ 13c net

Ox Balls .... dis 60&10 %

Pencils
Faber's Carpenters' .... net
" Round Gilt .... ⅌ gross $6 00 net
Dixon's Lead .... ⅌ gross $4·50 net
" Lumber .... ⅌ gross 9·00 net

Picture Nails and Knobs.
Brass Head .... dis 60&10 %
Porcelain Head .... dis 55&10 %
Richards' Patent .... dis 40 @ 40&10 %
Judd's .... dis 60&10 %

Pinking Irons .... per doz $2 75—dis 45&10 %

Planes and Plane Irons.
First Quality .... dis 35 %
Second Quality .... dis 50 %
Bailey's Patent Adjustable, new list .... dis 25&10 %
Plane Irons, Butcher's .... $5 50 to £ gold—new list
" Buck Bros .... $5 50 to £ gold
" Bailey's Patent .... dis 25&10 %
" Auburn Tool Co.'s .... dis 25 %
Plane Irons, Greenfield Tool Co .... net list
" Middletown Tool Co .... net list
" Ohio Tool Co .... dis 10 %
" Spear & Jackson's .... 5 00 to £ gold
Plane Irons, Sandusky Tool Co .... dis 10 %
Plow Bits, Greenfield Tool Co .... dis 10 %

Pliers and Nippers.
Button's Patent .... dis 33⅓ %
Hull's Patent Nippers, No. 1, $15; No. 2, $21 ⅌ doz dis 25 %
Leach's Patent Wire Cutters .... per doz $6 50—dis 15 %
Gas Pliers .... dis 25 %
Eureka Pliers and Nippers .... dis 25 %

Plumbs and Levels
Stanley R. & L. Co.'s Pat. Adjustable .... dis 60&10 %
" " " Non-Adjustable .... dis 60&10 %
Chapin's .... dis 60&10 %
Standard Rule Co.'s New Adjustable .... dis 60&10 %
Standard Rule Co.'s Non-Adjustable .... dis 60&10 %
Pocket Levels .... dis 50&10 %
Johnson's Patent Adjustable .... dis 60&10 %
Davis' Patent .... dis 60&10 %

Pulleys.
Judd's Axle .... per doz $0·75 dis 40 %
Hot House and Tackle .... dis 60&10 %
Jap'd Screw .... dis 60&10 %
Brass Screw .... dis 60&10 %
Jap'd Side .... dis 60&10 %
" Clothes Line .... dis 60&10 %
Hay Fork .... per doz $4 50 @ 5 00, dis 10 %

Pumps.
Douglas Cistern, etc .... new list dis 25 %
" S. & F. .... new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher .... dis 25 %
" " " Rams .... dis 20 %
" " " Garden Engines .... dis 10 %
Cucumber (Burlingham & Purdy)—
6 ft. No. 3, with 12 ft. pipe .... $4·00 net
ft. No. 1, with 12 ft. pipe .... 4·50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe, 8c. per ft.; Coupling, 20c. per ft.

Punches.
Belt or Drive .... per doz $2·00; $2·25; $2·50 dis 25 %
Spring .... per doz $6·50—dis 20&10 %
" Leach's Patent .... dis 15 %

Rail.
Sliding Door, Wrought Brass .... ⅌ ℔ 44c., dis 10 %
" " Iron, Painted .... ⅌ foot 9c—dis 55&10 %
Barn Door, ¼, ⅜ and ½ inch .... dis 60&10&10 %
" " for N. E. Hangers .... dis 60&10&10 %

Rakes.
Cast Steel .... dis 35 @ 40 %

$8 00	9 00	10 00	11 00
8	10	12	14 teeth.

Malleable .... dis 35 @ 40 %

$5 00	5 50	6 00	6 50
9	11	13	15 teeth.

Razor Straps.
Evan's .... dis 40 %
Imitation Emerson .... ⅌ doz $2·75—dis 40 %
Hunt's .... dis 40 %
Chapman .... dis 10 @ 15 %
Torrey's .... dis 10&10 %
Saunder's .... net @ 10 %

Rivets.
Iron and Tinned .... dis 55 %
In bulk .... dis 40 %
Copper Rivets and Burrs .... dis 30 %

Nos.	7	8	9	10	11	12	13	14	15
Per lb.	48c	50c	52c	54c	56c	58c	60c	65c	70c

Rivet Sets .... dis 10 %

Rods.
Stair .... dis 40 %
" American Patent .... dis 33⅓ %

Rollers.
Barn Door .... revised list dis 60, 10&10 %
Novelty .... dis 10 %

Rope. Manufacturers' List of Feb. 28, 1876.
Manila .... ½ inch and larger ⅌ ℔ 14½c
" .... ⅜ inch ⅌ ℔ 15 c
" .... ¼ and 5-16 inch ⅌ ℔ 15½c
Manila Tar'd Rope .... ⅌ ℔ 14 c
" Tar'd Lath Yarn .... ⅌ ℔ 15½c
" Hay Rope .... ⅌ ℔ 14½c
Sisal .... ½ inch and larger ⅌ ℔ 10½c
" .... ⅜ inch ⅌ ℔ 11 c
Sisal .... ¼ and 5-16 inch ⅌ ℔ 11½c
" Hay Rope .... ⅌ ℔ 10½c

Rules.

	Boxwood.	Ivory.
Chapin's	dis 60&10 %	dis 50&10 %
Stanley	dis 60&10 %	dis 50&10 %
Standard	dis 60&10 %	dis 50&10 %
Stephens'	dis 60&10 %	dis 50&10 %
Willis Thrall & Son	dis 60&10 %	dis 50&10 %

Sad Irons.
From 4 to 10 lbs .... ⅌ ℔ 3½ @ 3¾c net
Sad Iron, Nickel Stand attached .... ⅌ ℔ 9c
Self-Heating .... per doz $9·38 @ 9·50 net
" Tailors .... per doz $22·50 net

Sand Paper.
Beader & Adamson's Flint, 00 to 1½ .... $4 25 ⅌ ream }
" " " 2, 2½, & 3. 4 75 " }
" " " Assorted. 4 25 " } dis 15 %
" " Star .... ⅌ ream $3 25 }
" " Emery .... ⅌ ream $6 50 @ 11 50 }
New England, same list as B. & A. Flint .... dis 15 %
H. B. & M. Roman Flint " " " .... dis 15&5 %

Sash Cord.
Common .... ⅌ ℔ 18 @ 20c. net
Patent .... ⅌ ℔ 24c. net
Silver Lake, Russia Flax .... ⅌ ℔ 55c }
" " White Cotton .... ⅌ ℔ 55c } net
" " Drab Cotton .... ⅌ ℔ 60c }
Raw Hide .... dis 15 %

Sash Locks.
Clark's, Nos. 1 and 2, $10·00 per gross .... dis 33⅓ %
Ferguson's .... dis 33⅓ %
Norwich .... dis 25 %
Walker's .... dis 10 %
New England .... dis 20 %

Sash Weights.—Solid Eyes .... ⅌ ℔ 1¾c

Sausage Stuffers or Fillers.
Miles .... ⅌ doz $30—dis 30 %
Stow or Perry .... ⅌ doz No. 1, $15; No. 0, $21—dis 25 %
Draw Cut No. 4 .... each $30 00—dis 20 %

Saw Frames .... per gross $18 00—dis 15&10 %
Saw Rods .... $10 list, dis 10&10 %

Saws.
Spear & Jackson's .... $3 50 to £ gold
Am. Saw Co .... new list
Perforated Cross Cuts, all kinds .... 68c ⅌ foot
Inserted Tooth .... dis 10 %
All else .... dis 12½ %
Disston's Circular .... dis 25 %
" Mill .... dis 25 %
" Cross Cut .... dis 15 %
" Hand, Panel, Rip, &c .... dis 15 %
H. W. Peace's Circulars .... dis 25 %
" Other kinds .... dis 25 %
E. M. Boynton's Lightning .... dis 50 %
" " One-Man, all lengths .... dis 40&5 %
" " Buck Saws (Cross Bar) .... per doz $8·50
" " Billet Webs .... per doz 6·00
" " Pruning .... dis 40&5 %
Wheeler & Clemson Mfg. Co.'s Hand .... dis 15 %
" " " " Cross-Cut .... dis 30 %
Livingston's Butcher and Kitchen .... dis 15 %
Livingston's Framed Wood—

Nos.	101	102	103	104	105	106	
Per doz	$12·00	10·00	12·00	9·00	9·00	6·00	dis 10 %

Saw Sets.
Stillman's Genuine .... ⅌ doz $5·00—dis 10 %
" Imitation .... ⅌ doz 3·25—dis 20 %
Common Lever .... per doz $2·00 dis 20 %
Leach's .... No. 0, $8·00; No. 1, $15·00 dis 15 %
Nash's .... No. 1, $8·50; No. 2, $5·50 dis 20&10 %
Hammer, Hotchkiss .... $5·50 dis 10 %
" Bemis & Call's .... dis 20 %
" Aiken's Genuine .... $14·80 dis 40 %
" " Imitation .... $7·00 dis 25&10 %
Boynton's .... per doz $12·00 dis 30 %

Scales.
Hatch, Counter .... ⅌ doz $36—dis 25 %
" Tea .... ⅌ doz $15—dis 33⅓ %
Union Platform .... $6·00, $7·00—dis 40 %
Turnbull's .... dis 15 @ 20 %
Brown's .... dis 25&5 %
Fairbanks' .... new list dis 15 @ 20 %
Howe's .... dis 15&5 %
Chatillon's Grocers' .... dis 25 %
" Eureka .... dis 20 %
Universal Family .... dis 25 %
Scale Beams.
No. 1 300 to 1200 lbs .... 90c ⅌ cwt } dis 35 @ 40 %
No. 2 " " .... 75c ⅌ cwt }

Scrapers.
Box, 1 Handle .... per doz $5·00, dis 10 %
" 2 " .... per doz 6·00, dis 10 %
Foot .... dis 60 & 10 %
Ship (common) .... per doz $8 00 net
Ship—Providence Tool Co .... dis 10 %

Screw Drivers.
Hart, Bliven & Mead .... dis 55&10 %
Douglass Mfg. Co .... dis 25&10 %
" " No. 1 .... dis 20&10 %
Disston's .... dis 45 %
Stanley Rule & Level Co., No. 1 .... dis 30&10 %
" " No. 2 .... dis 40&10 %

Screws.
Flat Head Iron, List of September 1, 1875 .... dis
Round Head Iron " " " .... dis 30 %
Flat Head Brass " " " .... dis 40 %
Round Head Brass " " " .... dis 30 %
Brass and Silver Capped, List March 1, '75 .... dis 40 %
Lag or Common Coach, New List March 1, '76 .... dis 60 %
Coach, Patent Gimlet Point, List Jan. 1, 1875 .... dis 35 %
Bed .... list net
Japanned, List of Plain Screws of Sept. 1, 1875 .... dis 15 %
Machine—Flat Head, Iron, List Jan. 12, 1875 .... dis 25 %
" " Brass, " " .... dis 15 %
Round Head, Iron, " " .... dis 20 %
" " Brass, " " .... dis 10 %
English, Flat Head, Iron; American List, Sept. 1, 1875
Nettlefold & Chamberlain's .... dis 40&7½ %
Birmingham Sc'w Co .... dis 40&2½ %
Birmingham Screw Co., Brass .... dis 40&7½ %
Bench—Iron .... dis 60, 10&10 %
" —Wood, Beach .... ⅌ doz $3·00 net
" " Hickory .... dis 20&10 %
Hand .... dis 25&10 %
Hand Rail, Sargent's .... dis 55&10 %
" " Humason, Beckley & Co.'s .... dis 40&5 %
Jack—Bell Bottom .... dis 15 %

Scythes.
Blood's German Steel, Grass .... ⅌ doz $10 00 }
" Cast " " .... ⅌ doz 11 00 }
" Silver " " .... ⅌ doz 12 00 }
" German " Grain .... ⅌ doz 14 00 } dis $1·50 from list
" Cast " " .... ⅌ doz 15 00 }
" Excelsior and Granger .... ⅌ doz 11 00 }
" Young America .... 10 50 }
" Silver Clipper .... 13 00 }
Scythe Snaths .... dis 20 %

Sieves.—Mann's Patent.................dis 35 @ 40 %

	14	16	18	20	24	30 mesh
Iron...$4·00	4·00	4·25	4·50	4·75	6·50 ₱ doz	
Plated. 4·75	5·00	5·25	5·50	5·75	8·50 "	

Wood Rims......18 mesh, Small, $1·50 per doz, dis 10 %
" " ...... " Regular, 1·80 per doz, dis 10 %

Shears and Scissors.
Cast Steel.................dis 75&10 %
Cast Iron..........New l'st July 15..........dis 40 %
Heinisch Sons' Trimmers and Scissors..........dis 65 %
" " Standard quality Shears and Trimmers..........dis 40 %
Seymour's Straight Trimmers..........dis 60&10 %
" Scissors..........dis 50 %
Pruning..........der doz $10 00—dis 35 %
Barnard's Lamp Trimmers..........per doz $3·75

Sheaves.
Sliding Door, M. W. & Co. list..........dis 40&5&2 %
" R. & E. list..........dis 50&5&2 %
" Patent Roller..........dis 25 %
" " Hatfield's..........dis 30 %
" Russell's Anti-Friction..........dis 50&2 %
Sliding Shutter, R. & E. List..........dis 50&5&2 %
" " Sargent's List..........dis 55&10 %

Shovels and Spades.
Ames..........dis 20 %
Birmingham Shovel Co..........dis 15 %
Rowland's..........dis 25 %
Old Colony..........new list dis 10&5 %
Middleboro' Shovel Co..........new list dis 20 %
C. E. Jennings & Co..........New list dis 30&10 %
Dunning's Shovels and Scoops..........dis 20&7½ %

Shovels and Tongs.
Iron and Brass Head, R. & E. list..........dis 50&10&2 %
" " Har: s..........dis 55&2&10 %
Polished Steel..........dis 50&10&2 %

Skates.
Barney & Berry's
N. Y. Club..........₱ pair $2·75
B. & B. Club.......... " 3·50
All Clamp.......... " 4·25
Rink.......... " 8·00 } dis 25 %
Florence Steel..........$1·0 dis 25 %
" Spring..........3·00 dis 30 %
" All Clamp..........3·50 dis 30 %
Peck & Snyder's—
No. 1, Blued..........per pair $5·00
No. 2, Nickel Plated..........per pair 6·00
No. 3, " " extra..per pair 8·00
Clipper Club Blued..........per pair 3·50
" " Full Pol'd....per pair 4 50
" " " and Nickel Plated..........per pair 6·00 } dis...25 %
Acme Club Skates.—Nos. 5 7 10 12 14
Pair $4·00 5·00 7·00 7·50 8·00 dis 20 %

Slates.
Square Frames, Round Cornered, by case......dis 65&10 %
Less than a case..........dis 65 %

Spoke Shaves.
Iron..........dis 33⅓&10 %
Wood..........dis 30 %
Bailey's..........dis 25&10 %

Spoke Shave Irons.
Spear & Jackson's..........$5·00 to £ gold

Spoons.
Tinned Iron..........dis 10 %
By the case..........dis 20 %
Basting..........dis 10 %
Britannia..........dis 50&5 @ 55 %
" Boardman's, new list..........dis 55 %
Rogers & Bro., A 1..........dis 40 %
Derby Silver Co..........dis 40&5 %
Holmes, Booth & Haydens..........dis 40&5 %
Nickel Silver Co..........dis 40 %
German Silver..........dis 30&2½ %
Tin (P. S. & W.)—
Teas..........$1·50 ₱ gross, net
Tables..........2·75 " net

Stocks and Dies..........dis 5&10 %

Stone.
Hindostan Stone..........₱ ℔ 6c
" Axe Stone..........₱ ℔ 8c
" Slips..........₱ ℔ 10c } dis 20&10 %
Sand Stone..........₱ ℔ 6c—dis 20&10 %
Washita Stone..........No. 1, ₱ ℔ 30c net
" ....No. 2, ₱ ℔ 25c net
" Slips..........No. 1, ₱ ℔ 60c net
Arkansas Stone..........No. 1, ₱ ℔ $1·35 net
" Slips..........No. 1, ₱ ℔ $2·50 net
Grindstones, Family, J. F. Green & Bro..........dis 20 %
" " Loring's..........dis 10 %

Stove Polish.
Joseph Dixon's..........₱ gross, 6 00
Gem..........₱ gross $4·25 @ 4·50 net
Gold Medal..........₱ gross $6 00 dis 25 %
Rising Sun..........per gross $5·75 net

Squares.
Steel..........dis 50 %; full cases, dis 50&10 %
Iron..........dis 50 %; full cases, dis 50&10 %
Nickel Plated..........add $2 50 @ $4 00 ₱ doz net
Try Squares and T Bevels..........dis 45&10 %
Star Try Squares and Bevels..........dis 30 @ 35 %
Disston's Try Squares No. 1..........dis 30 %
" " No. 2..........dis 45 %
" " Improved, Nos. 1 & 2......dis 30 %

Tacks, Brads, &c.—List of January 1, 1876.
Tacks, Half Weight, American..........dis 75&
" Full " "..........dis 50&
" Half " Swedes..........dis 65&
" Full " "..........dis 30&
" Carpet, Am. and Swedes..........dis 10&
" " Leather Head..........dis 10&
" Copper..........₱ ℔ 45c. dis
Brads, Half Weight..........dis 50& } dis 10 % for cash
Shoe Nails—
4-8ths and longer, 9c.; 3½-8ths, 9½c. ₱ ℔, dis 10 %
Trunk, Clout and Finishing Nails—
¼ ⅜ ½ ⅝ 1 1¼ in. and over.
25 21 17 15 13 11c. ₱ ℔. dis 10 %
Double Pointed Tacks..........dis 33⅓&10 %

Tapes, Measuring.
American Flask and Cap Co..........dis 20 %
Eddy's..........dis 20 %

Tea Trays.
American Tea Tray Co..........dis 15 %

Thermometers.
Tin Case..........dis 50&10 %

Toe Calks.
Winsted..........₱ ℔ 13c., dis 10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)..........dis 20 %
Wood Bottom..........per doz $12—dis 30&10 %
All Iron..........per doz $10 50—dis 30&10 %

Tinners' Tools and Machines.
P. S. & W..........dis 10 %

Traps.
Game, Newhouse..........dis 25 %
" Peck, Stow & Wilcox..........dis 30 %
" Hotchkiss......old list dis 30 %; new list dis 10 %
" Blake's Patent..........dis 30 %
Mouse, Wood Choker..........₱ doz holes, 15 @ 16c
" Patent Chocker (Union Nut Co.)..........₱ doz holes 16 @ 18c net
" Round, Wire..........₱ doz $1 50 to 2 00 net
" Square, "..........₱ doz 2 00 to 2 50 net
" Cage, "..........₱ doz 2 50, dis 10 %
" Patent Self Setting..........per doz holes 25c net

Trowels.
Lothrop's Brick and Plastering..........dis 10 %
Disston's Brick and Plastering..........dis 12½ %
Rose's Brick..........dis 5 %
Brades' Brick..........gold, dis 10 %
Worrall's Brick and Plastering..........dis 20 %
Garden..........dis 25 %

Triers.
Butter and Cheese..........dis 25 %

Ventilators (Window).
Nickel and Gilt..........per dozen $16·00 @ 18 00

Vises.
Solid Box, Trenton...40 to 160 lbs., 16c.; 160 and over, 20c
" " Wilson's..........30 to 160 lbs., 18c
160 and over, 22c } dis 25 %
" " Peter Wrights..........16c gold
Parallel, Parker's..........dis 20 %
" Wilson's..........dis 30&10 %
" Sargent's..........dis 55&10 %
" Trenton..........dis 15 %
" Backus and Union..........dis 25 %
" Merrill's..........dis 15 %
" Fisher & Norris..........dis 15&10 %
" Buffalo..........dis 25 %
" Stevens'..........dis 15 @ 20 %
Saw Filers, Bonney's..........per doz $20·00 dis 20 %
" Stearn's..........per doz $20·00 dis 20 %
" Hopkins'..........per doz $17·50 dis 10 %

Wheel Barrows.
Canal (Pugsley & Chapman)..........new list dis 15 %
Coal, Garden and Stone (Pugsley & Chapman)....dis 25 %

Well Wheels.
Revised list..........dis 60&10 %

Wire.
Brass and Copper..........List of Oct. 27, 1875, net
Bright and Annealed..........Nos. 0 @ 18 dis 45 @ 50 %
" " .... " 19 @ 26 dis 50 @ 55 %
" " .... " 27 @ 36 dis 55 @ 60 %
Coppered.......... " 0 @ 18 dis 40 @ 45 %
Galvanized, Nos. 0 to 9..........₱ ℔ 8 @ 8½c net
Galvanized, Nos. 10 to 18..........market list dis 15 @ 20 %
Tinned..........dis 25 @ 30 %
Cast Steel..........dis 15 @ 20 %
Tinned Broom Wire..........dis 35 @ 40 %
Galvanized Telegraph, Nos. 8 and 9..........₱ ℔ 9c
Galvanized Telegraph, Nos. 10 and 11..........₱ ℔ 10c
" " " 12..........₱ ℔ 10½c
Annealed Fence, Nos. 8 and 9..........dis 50 %
" Grape, " 10 to 14..........dis 50 %
Fence Staples..........₱ ℔ 7½ @ 8c
Stubs' Steel Wire..........$7 00 to £ gold
Judd's Picture Wire..........dis 50 %
Clothes Line Wire..........per coil 60c. net

Wrenches.
American Adjustable..........dis 45 %
Baxter's Adjustable "S"..........dis 20 %
" Diagonal..........dis 20 %
Collins & Co.'s..........dis 45 %
Coes' Genuine..........dis 40&10 %
" Pattern (Wrought)..........dis 50&10 %
" " (Malleable)..........dis 65&10 %
Diamond Hardware Co..........dis 40 %
Lindsay's Patent..........dis 25 %
Taft's Pattern..........dis 70&10 %
Davis' Patent Duplex..........new list dis 25 %
Bemis & Call's Patent Combination..........dis 20&5 %
" " Merrick's Pattern..........dis 25&2½ %
" " Brigg's Patent..........dis 15&10 %
Aiken's Pocket (Bright)......per doz $10·00—dis 50&10 %

Wringers.

	Less than 2 doz	2 doz lots
Providence..........₱ doz	$72·00	$70·00
Reliance..........₱ doz	69·00	67·00
Universal—Extra..........₱ doz	72·00	70·00
Novelty..........₱ doz	72·00	70·00
Sherman..........₱ doz	72·00	70·00
Eureka..........₱ doz	60 00	58·00
Wringers without Cog Wheel..₱ doz	60·00	58·00

Stamped Tin Ware.
Common Stamped Ware..........dis 10 %
Stamped Deep and Retinned Ware..........dis 20&10 %
Japanned Tin Ware..........dis 5 %
Planished Tin Ware..........dis 20 %

METALS.

IRON.—Duty: Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1⅞ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—American.
Foundry No. 1..........₱ ton, $23 00
Foundry No. 2.......... " 21 00
Gray Forge.......... " 20 00
SCOTCH.
Coltness.......... " 32 00 @ 33 00
Glengarnock.......... " 30 00 @ 31 00
Gartsherrie.......... " 32 50
Eglinton.......... " 29 00 @ 30 00
Summerlee.......... "

Bar Iron.
Am. Refined, at mill..........2·4c.

Rails.
American, at works, currency.......₱ ton 42 00 @ 46 00
Old Rails..........

Scrap.
Wrought Scrap.......... " 32 00 @

Bar Iron from Store.
Common Iron.
⅜ to 2 in. round and square....
to 6 in. x ⅜ to 1 in.... } ₱ ton $52 50
Refined Iron.
⅜ to 2 in. round and square....
1 to 6 in. x ⅜ to 1 in....
1 to 6 in. x ¼ and 5-16.... } " 55 00 @ 57 50 / 60 00 @ 62 50
Shafting Iron—2½ to 4 in.......... " 60 00 @ 65 00
Rods—3-16 to ⅝ round and square.. " 65 00 @ 110 00
Bands.......... " 70 00 @ 72 50
Hoops—⅝ to 2 in.......... " 75 00 @ 130 00
Swedish Iron.
Ordinary sizes.......... " 130 00 @ 132 50
Plow size.......... "

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20.......₱ ℔	3¾c	5c	5¼c
21 to 24...... "	4c	5¼c	5½c
25 to 26...... "	4¼c	5¼c	5⅞c
27...... "	4½c	5¾c	6c
28...... "	4¾c	5c	6¼c
Galvanized, 14 to 20, prime, ₱ ℔	8½c; 2d quality ₱ ℔ 7¾c		
" 21 to 24 "	9¼c	...	8¼c
" 25 to 26 "	10 c	...	9 c
" 27 "	10½c	...	9½c
" 28 "	11½c	...	10½c

Patent Planished..........A, 12c.; B, 11c. ₱ ℔
Russia, Nos. 8 to 16.......... " 15½c
" Stained, No. 1.......... " 14½c
Belgian.......... 10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.
½ 5 5½ 6 7 inch.
$2·50 3·50 4·50 5·25 6·50 per doz.
RUSSIA IRON.
4½ 5 5½ 6 7 inch.
5·00 7·00 9·50 12·00 14·00 per doz.

COPPER—Duty: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₱ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem.
American Ingot..........₱ ℔ 23½ @ 23¾c
English " ....
SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot..........32c ₱ ℔
Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot..........34c. "
Braziers' Copper, 12 oz. per square foot..........36c. "
Circles less than 84 inch in diameter..........35c "
Circles, 84 inch diameter and over..........38c. "
Segment and Pattern Sheets..........35c. "
Locomotive Fire Box Sheets..........32c. "
Sheathing Copper, over 12 oz. per sq. ft..........31c. "
" " 12 oz. ₱ sq. ft. and lighter..........36c. "
Bolt Copper..........32c. "
Copper Bottoms, 38c. ₱ ℔..........net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
Sheathing Copper, tinned on one side, by the case..........6c. ₱ sheet
For less than a case..........8c. ₱ sheet
Tinning Sheets, ordinary sizes..........2½c. ₱ sq. ft
For tinning both sides, double the above amount.
O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier.......37c. By the case, 36c. ₱ ℔
12 oz. and lighter..........40c. " " 39c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier..........39c. By the case, 38c ₱ ℔
(And all sizes not over 30 inches wide.)
30x60
14 and 16 oz. and heavier..........41c. ₱ ℔
12 oz..........44c. "

Brass
Brown & Sharp's Gauge the Standard except for Fine Wire.
BRASS MANUFACTURERS' PRICE LIST.
October 27th, 1875.
Net cash prices for Roll and Sheet Brass, Wire, &c., for quantities of 100 pounds and over at one time. For less than 100 pounds, three cents additional.
HIGH BRASS
All Nos. to No. 28, and widths 14 in. and under..........27c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive..........30c
Over 20 in. to 30 in., inclusive..........33c
½c. ₱ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at.....45c
Sheets 24x48 in. and all sheets cut to particular sizes and lengths..........33c
Printers' Rules..........40c
Sheets wider than 30 in. and under 40 in..........40c
" " 40 in. and over..........42c
Circular sheets, in diam. from 4 in. to 14 inclusive....37c
" " " over 14 " 20, "....40c
" " " " 20 " 30, "....43c
" " " " 30 " 40, "....46c
" " " " 40 in..........49c
LOW BRASS.
Four cents ₱ ℔ more than High Brass.
Gilding Metal, 7c, ₱ ℔ more than High Brass.
Platers' or Gold Metal { In Bars..........42c / Sawed..........45c / Planed or Polished....48c
FOR SLITTING.
Metal, in width 2 in. to ⅛ in. to No. 30, inclusive, 1c. per ℔. advance.
Metal, in width 2 in. to 1 in., thinner than No. 30, 2c. per ℔. advance.
Metal, in width 1 in. to ⅛ thinner than No. 30, 3c. per ℔. advance.
Metal, in width ⅛ in. to ¼, to No. 30, 2c. per ℔. advance.
Metal, in width ⅛ in. to ¼ thinner than No. 30, 5c. per ℔. advance.
Metal, ¼ in. in width and less, 10c. per lb. advance
GERMAN SILVER MARKET METAL AND WIRE

	Market Metal.	Wire.
4 per cent., 12 in., to No. 26..........	$0·60	$0·80
6 " " "	·70	·90
10 " " "	·80	1·10
15 " " "	1·00	1.35
18 " " "	1·10	1·50
20 " " "	1·20	

German Silver Sheets over 12 in. wide, and weighing more than 10 ℔s., $2 per ℔., net.
Advance 2c. for each additional in., in width above 12 in., and 2c. per ℔. on each No. thinner than Nos. 26 to 36 inclusive.
All German Silver thinner than No. 36 is Platers', at 50c. per ℔. additional.
German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20..........	0·30	0·34	0·40
Nos. 21, 22, 23..........	0·31	0·35	0·42
Nos. 24 and 25..........	0·32	0·36	0·43
Brass Rods, No. 8 and larger	0·36	0·40	0·46
Wire straightened and cut, smaller than No. 8..........	0·40	0·44	0·50

Fancy Wire not less than 4 cents per pound advance of Round Wire.
Spring Wire, 2 cts. per lb. advance.

FINE WIRE, BY THE OLD ENGLISH FINE WIRE GAUGE.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 26..........	0·41	0·45	0·51
No. 27..........	0·44	0·48	0·54
No. 28..........	0·46	0·50	0·56
No. 29..........	0·48	0·52	0·58
No. 30..........	0·50	0·54	0·62
No. 31..........	0·52	0·56	0·66
No. 32..........	0·56	0·60	0·71
No. 33..........	0·60	0·64	0·81
No. 34..........	0·64	0·68	0·91
No. 35..........	0·69	0·73	1·03
No. 36..........	0·78	0·82	1·15
No. 37..........	0·98	0·98	1·28
No. 38..........	1·28	1·28	1·58

Ten cents per pound extra for Spooling.

TUBING. ₱ ℔
Plain to No. 20 inclusive, above ⅜ in. to 1½ in. ......$ ·44
" 1½ to 3 in. inclusive..........·38
" above 3 in..........·50
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain ⅜ inch..........·50
" 5-16 "..........·60
" ¼ "..........·80
" 3-16 "..........1·20
" ⅛ "..........1·60
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing, 4 cents advance on List above Plain.
English, Scotch and Extra Patterns Fancy Tubing to No. 20, 9 cents above Plain.
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ¼ cent for each additional cutting under two feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance

ZINC TUBING.
Plain..........·28
Fancy..........·31
Scotch and Extra Patterns..........·34

GERMAN SILVER TUBING.
4 Per cent..........·85
6 "..........·95
9 "..........1·10
12 "..........1·25
15 "..........1·40
16 Per cent..........1·45
18 "..........1·55
20 "..........1·65

MISCELLANEOUS.
Common Plain Brass Pail Ears..........·39
Hose Pipes, 500 and over..........·71
" under 500..........·76
Door Rail..........·40

SCRAP.
High Brass Scrap, 16 cents.
Low " 18 cents.
Gilding, 20 cents.
Turnings, Filings and Chips, half the price of Scrap.
Orders for Goods on this list received on or after this date, will be filled at the rate herein stated.
Terms—Net cash. No discount allowed. Interest to be added after thirty days.

ANTIMONY..........15¼ @ 15½c. gold

LEAD—Duty: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish..........7c gold
German Refined..........6¾c gold
English..........6¾ @ 7c gold
American..........6⅜ @ 6¾c gold
Bar..........dis 10 %..........9c.
Pipe..........dis 10 %..........9½c.
Tin Lined Pipe..........dis 10 %..........16½c.
Sheet..........dis 10 %..........10c.
Shot..........dis 10 %. Drop, 10c. Buck, 11c.
BABBITT METAL.
N. P. U..........₱ ℔ 3½ @ 9c
A., 25c.; B, 20c.; C, 15c.; D, 12c. ₱ ℔.

SOLDER..........No. 1, 15c.; No. 2, 14c

STEEL—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3¼ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool..........15 @ 16c
Spring..........10c
Homogeneous..........12½c
Tire..........12½ @ 18½c
Machinery (round and square)..........10 @ 11c
File..........11c
Sheet..........14 @ 16c
Saw Plate, mill and mulay..........14 @ 16½c
Saw Plate, gang and X cut..........13 @ 14c
" circular as to size..........18 @ 30c

Chrome Steel.
Tool..........₱ ℔ 20 @ 21c
Tool, extra fine.......... " 40 @ 75c
Spring..........₱ ℔ 12c and upward
Machinery..........₱ ℔ 11c
Hammer.......... " 15c,
Gun or Homogeneous.......... " 16c

English Steel.—payable in gold, net.
" Best Cast..........₱ ℔ 17½c
" Extra Cast.......... " 18½c
" Round Machinery, Cast..........₱ ℔ 10½ @ 11½c
" Swaged, Cast.......... " 19½c
" Best Double Shear.......... " 17½c
" Blister, 1st quality.......... " 14½c
" " 2d quality.......... " 13 c
German Steel, Best.......... " 11½c
do 2d quality.......... " 10½c
" 3d quality.......... " 9½c
Sheet Cast Steel, 1st quality.......... " 17½c
" " 2d quality.......... " 14½c
" " 3d quality.......... " 12½c
File Steel, Flat and ½ Round.......... " 12½c
" Square and Round.......... " 12½c
" Mill.......... " 13½c
" Taper to 4 inch.......... " 16c
" Taper 3 and 3½ inch.......... " 18c

SPELTER—Duty: In Pigs, Bars and Plates, $1 50 per 100 lbs.
Silesian, cash..........6¾ @ 7c., gold
American "..........7¾ @ 11c., currency

TIN—Duty: Plates, Sheets, Tagger and Terne, 1·1c per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca..........₱ ℔ 26 @ 27c., currency
Straits..........₱ ℔ 22c., currency
English..........₱ ℔ 22c., currency

TIN PLATES, CURRENCY PRICES.
I C 10x14, Prime Charcoal..........8·75
12x12, " ....9·25
14x20, " ....9·50
I X 10x14, " ....11·00
12x12, " ....11·50
14x20, " ....12·00
D C 12½x17 " ....8·25
D X 12½x17 " ....10·50
For each additional X add..........2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14..........	$8·25	8·00	7·50 @ 7·75
I C 12x12..........	8·75	8·50	8·00 @ 8·25
I C 14x20..........	9·00	8·50	7·50 @ 8·00

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20....	$ 8·25 @ 8·50	7·75 @ 8·00	7·25 @ 7·50
I X 14x20....	10·50		
I C 20x28....	17·00 @ 17·50	16·25 @ 16·75	15·25 @ 15·75
I X 20x28....	22·50		
I C 20x20....	22·00		
I C 14x20 M. F. Brand..........			$9·50

ZINC.—Duty: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₱ ℔.
Sheet..........cask 9¾c
" ....open 10½c

Paper Stock, Old Metals, & c

(Dealers' Selling Price.)
Canvas linen..........6 @
" cotton, No. 1..........6¾ @ 6¾
" " No. ....@ 8½
White linen rags, No. 1..........6¾ @
" " No. 2..........4¾ @
Colored..........2¾ @
Mixed woolens..........2½ @ 3¼
Soft woolens..........5¾ @ 6¾
Gunny bagging..........2 @ 2¾
Jute Butts..........2½ @ 2¾
Kentucky bagging..........5¼ @ 5½
Book stock..........4 @ 4¾
Waste paper and scraps..........1 @ 1½
Rope cuttings..........1½ @ 3
Kentucky Bale rope..........4 @ 4½
Oakum junk, No. 1..........5½ @ 5¾
" No. 2..........@ 4
Grass rope..........3½ @ 4
Tarred Shaking..........1½ @ 1¾
White Collar Cuttings, all paper..........7 @
" " muslin lined..........5 @
" Envelope "..........7 @
Hard White Shavings, No. 1..........6½ @
Soft " " No. 1..........6 @
White Shavings, No. 2..........5½ @
Mixed Shavings, part white..........4 @ 4¾
Imperfections, No. 2, best folded sheets..........5 @
" 1, Heavy Stock..........4¾ @
Book Stock, Mixed..........3½ @
" " No. 2, light..........2¾ @ 2½
Prints..........1½ @ 2
Pure Manilas..........2¼
Bogus Manilas and Hardwares..........1 @ 1¾
Commons..........1 @
Binders' Board Cuttings..........1½ @
Straw Board Cuttings..........1½ @
Woolen Tailor Clips..........10 @
Satinet Tailor Clips..........1½ @

Old Metal.
Copper..........@ 18
Yellow metal..........14 @
Brass..........13 @ 14
Heavy Composition..........16 @ 17
Old lead, solid..........5 @ 6¼
Tea lead..........5¼
Zinc..........@ 4¼
Pewter, No. 1..........17
" No. 2..........10 @ 12
Spelter..........@ 6
Wrought iron..........per ton $30·00
Machinery iron..........per ton $15·50
Light Iron..........per ton $16·00
Stove plate..........per ton $13·00
Burnt Iron..........per ton $11·00

Paints, Oils, etc.

Paints.
Black lamp—Coach Painters..........₱ ℔ 20c
" Ordinary..........6c
" Ivory Drop, fair..........15c
" best..........26c
Black Paint, in oil..........kegs, 8c.; ass't'd cans, 11 c
Blue, Prussian, fair to best..........50 @ 75
" " " in oil..........35 @ 65c
" Chinese dry..........88c
" Ultamarine..........25 @ 30c
Brown, Spanish..........1½c
" Van Dyke..........9c
Carmine, 40..........$12 00
Green, Chrome..........15 @ 23c
" " in oil..........18 @ 25c
" Paris.......... good, 30c; best, 40c
" " in oil.......... " 30c " 45c
Mineral Paints..........1½ @ 4c
Orange Mineral..........14c
Red Lead, American..........9¼c
" " English..........10½ @ 11c
" Venetian (N. C.) dry..........2½c
" " in oil..........ass't'd cans, 11c; kegs, 8½c
" Indian, dry..........10c
Rose Pink..........13c
Sienna, American, Raw..........4c
" Burnt..........4½c
" " in oil..........16 @ 20c
" Raw " ....15 @ 25c
Umber, Burnt..........4 @ 8c
" " in oil..........16 @ 21c
" Raw..........3½ @ 7½c
" " in oil..........16 @ 22c
Vermillion, Chinese..........1 35, gold
" English..........82½c., gold
" Trieste..........1 10 "
" American, Common..........25c
White Lead, American, pure dry..........10c
" " " in oil..........10½c
White, Paris, English, prime..........in bbls. 2½ @ 2¾c
Yellow Ochre, French..........2½ @ 2¾c
" " " in oil....ass't'd cans, 11c; kegs, 8½c
" " Vermont..........in casks 1½c
Yellow Chrome..........17 @ 27c
" " in oil..........18 @ 28c
Zinc White, American No. 1 dry..........9c
" " 1, in oil..........11c
" French (Paris)..........11c
" " in oil..........12c

Oils.
Linseed Raw..........₱ gal. casks, 59c. bbl., 60c
" Boiled.......... " 64c. " 65c
Whale, Crude.......... "
" Bleached Winter.......... " 75c
Sperm, Crude..........bbl. 1·65
" Winter, unbleached.......... " 1·90
" " Bleached.......... " 2 00
Seal, Extra Refined.......... "
Lard, Pure Winter.......... " 1·15
" Spring.......... " 1·05
Cotton Seed, Crude.......... " 62c
" Southern Yellow.......... " 67c
" White.......... "
Neatsfoot, Winter..........70c @ $1·10
Natural Lubricating..........38c @ 40c

Sundries.
Asphaltum..........9c
Benzine..........₱ gal. 16c
Chalk..........¾c
" Block..........
Dryer, Patent, Am'n..........ass't cans, 10½c.; kegs, 9c
" " English.......... " 12c.; " 9c
Flocks..........
Frostings..........51c
Glue, White..........33 @ 44c
" Sheet..........20c
Glaziers' Points, Zinc..........9c
Gum, Copal..........36c
" Damar..........25c
" Shellac, English..........55c
" " " dark..........50c
Litharge..........9½c
Pumice Stone, selected Lumps..........4 @ 6c
" powdered..........4c
Putty in bladders..........3½c
" in bulk..........3c
Rotten Stone, soft, English..........8c
Spirits Turpentine..........39c
Whiting, Spanish..........¾c

Glass.

Single Thick.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9..........	$11·00	$10·50	$10·00	$9·50
8 x 10 to 10 x 15..........	12·00	11·00	10·50	10·00
11 x 14 to 12 x 16..........	13·50	12·50	11·50	10·75
11 x 18 to 14 x 24..........	14·00	13·00	12·00	11·25
15 x 24 to 15 x 32..........	17·00	16·00	14·00	13·00
16 x 32 to 20 x 30..........	18·00	16·50	14·50	18·50
22 x 30 to 15 x 38..........	19·50	18·00	16·00	
20 x 34 to 22 x 36..........	20·50	19·50	17·00	
24 x 36 to 24 x 40..........	23·00	20·50	18·00	
24 x 42 to 28 x 42..........	25·50	22·50	20·50	
26 x 46 to 30 x 48..........	26·50	23·50	22·00	
30 x 50 to 32 x 52..........	28·00	25·50	23·00	
32 x 54 to 34 x 56..........	29·00	27·00	24·00	
34 x 58 to 34 x 60..........	31·50	29·00	26·00	
36 x 60 to 40 x 60..........	35·00	32·00	29·00	

Double Thick.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9..........	$19·50	$18·50	$17·50	$16·50
8 x 10 to 10 x 15..........	21·00	19·50	18·50	17·50
11 x 14 to 12 x 16..........	23·00	21·00	20·00	18·50
11 x 18 to 14 x 24..........	24·50	22·00	21·00	19·50
15 x 24 to 15 x 32..........	30·00	28·00	25·00	
16 x 32 to 20 x 30..........	32·00	30·00	26·00	
22 x 30 to 15 x 38..........	34·00	32·00	28·00	
20 x 34 to 22 x 36..........	37·00	34·00	30·00	
24 x 36 to 24 x 40..........	40·00	36·00	32·00	
24 x 42 to 28 x 42..........	44·50	40·00	36·00	
26 x 46 to 30 x 48..........	46·50	42·00	38·00	
30 x 50 to 32 x 52..........	48·50	41·50	40·00	
32 x 54 to 34 x 56..........	50·00	46·50	42·00	
34 x 58 to 34 x 60..........	55·00	50·00	46·00	
36 x 60 to 40 x 60..........	60·00	55·00	52·00	

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All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket. An additional 10 per cent. will be charged for all Glass more than 40 inches wide.

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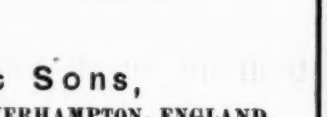

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"Zero" Stove Cover Lifter.

Patented July 27th, 1875.

Made in one piece from a superior quality of sheet iron, with a perforated cylindrical handle. Its superior advantages over any other style of cover lifter are manifest, as it will not break or bend, keeps always cool, and will fit any stove cover made. Send for Circular.

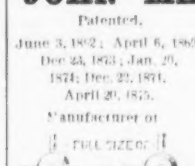
EAST RIVER SHEET METAL MFG. CO.,

SOLE MANUFACTURERS, **206 Water Street, New York**

JOHN MAXHEIMER,

Patented,
June 3, 1862; April 6, 1869
Dec 24, 1872; Jan. 20, 1874; Dec. 29, 1874; April 20, 1875.

Manufacturer of



JAPANNED and PATENT EUREKA Bright Metal

BIRD CAGES.

Nos. 247 & 249 Pearl Street NEW YORK.

IVES, WOODRUFF AND CO.

MANUFACTURERS OF

Eagle Screw Clamps,

FINE

CARRIAGE MOUNTINGS

in Iron, Brass, Oxi and Gold.

SUPERIOR

Malleable Iron

Made under the

ANDREW'S PATENT PROCESS.

Mount Carmel, - - CONN.

E. S. LEE & CO.'S

descriptive circular an price list o

WATER'S

Tree Pruner

for 1876 will be mailed t all applicants.

Extraordinary inducements offered to jobbers and the trade throughout the United States to engage in the sale of same. Light, durable, practical, cheap. All goods warranted.

Prices:

With 4 foot pole	....	$2 50
" 6 "	....	2 75
" 8 "	....	3 00
" 10 "	....	3 25

Address

E. S. LEE & CO., Rochester, N. Y.

IXL

The Woman's Friend.

The Best Finished & Most Perfect

FLAT IRON ever made.

INTERCHANGEABLE HANDLE and SHIELD COMBINED.

Patented May 4, 1875

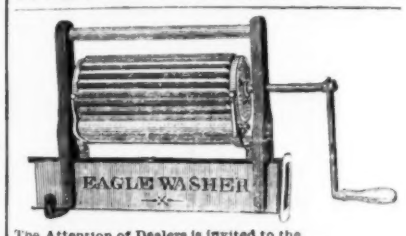
Set No. 1	—3 irons of	5, 6 and 7 lbs.	1 Handle..	$2 00
" 2	—3 "	6, 7 and 8 lbs.	"	2 30
" 3	—3 "	7, 8 and 9 lbs.	"	2 60

Nickel Plated Irons.....75 cents extra.

Packed in case of 12 sets or 36 irons. Send for Illustrated Circular.

BROOKLYN SAD IRON CO.,

85 First Street, Brooklyn, E. D., N. Y.



The Attention of Dealers is invited to the

EAGLE WASHER.

It embodies several important new features, a very complete arrangement of parts, and is faultless in construction. Send for descriptive circular and prices to the manufacturers.

OAKLEY & KEATING,
40 Cortlandt St., N. Y

Baltimore

COMMISSION HARDWARE HOUSE

EDW'D M. KEITH,

(Late of KEITH & KELSO.)

No. 25 S. Charles Street, - - BALTIMORE

SOLE AGENT FOR

Chesapeake Nails, R. Mann's Axes,

NAYLOR & CO.'S CAST STEEL AND NAIL RODS,

And S. Loring's Tacks,

AND DEALER IN

General Hardware.

SOLICITS CONSIGNMENTS.

Clark's Patent Noiseless

Pressure Blowers and Exhaust Fans.

R. W. WILD, Agent,

20 Cortlandt St., New York

Portable and Stationary Engines, Boilers, Grist Mills, etc.

LOUIS RAISER,

Successor to GEORGE REUTHER.

Machinist, Model and Lathe Maker.

125 & 127 Worth Street, NEW YORK.

Bet. Centre & Elm Sts. (Saw Mill)

Residence, 214 Canal St.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supples & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.—Solid Cast Steel.....₩ lb 14c
Peter Wright's, ₩ lb., gold.....11½c
Wilkinson's " .....11 c
Eagle.....list 14 cents—dis 20 @ 20&10 %
Apple Parers.—Victor.....per doz $1 75
Domestic..... " 7 75
Reading..... " 7 75
Bay State Paring, Coring and Slicing..... " 15 00
" " Peach Parers..... " 10 50
10 doz. lots 50c. per dozen discount.
Axes.—
Mann's (according to weights)..Per doz. $11 00 @ 10 00
Red Indian. " " " " 11 00 @ 10 00
Red Chieftain " " " " 11 50 @ 10 50
Crown Prince " " " " 11 50 @ 10 50
Hunt's " " " " 12 50 @ 11 50
Augers and Auger Bits.—
Benjamin Pierce.....dis 35 %
Douglass' & Ives' Bits.....dis 40&5 %
Connecticut Valley Auger Bits.....dis 40&5 %
Cook's Bits.....dis 40&10 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 40&5 %
Douglass' & Ives' Augers.....dis 40&5 %
Watrous' Ship Augers.....dis 15 %
Bonney's Pat. Hollow Augers.....dis 25 %
Stearns' Patent Hollow Augers.....dis 25 %
Balances.—
Landers, Frary & Clark's..... } Sold on Morton's new
Morton's..... } List.....dis 50 %
Chattillon's..... }
Common Spring with Hook.....₩ doz $1 38 @ 2 00
Bells.—Bevin Bros. Mfg. Co. Light Hand Bells.....dis 70 %
Common (Tissue Paper Weight).....dis 70&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50&5 @ 50&10 %
Gt. Western & Kentucky Cow..dis 50&10 @ 50 10&5 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 20 @ 25 %
Douglas Mfg. Co., complete with augers..dis 20 @ 25 %
Common Boring Machines, no Augers.....$4 00 @ 8 75
Angular " " ..... 5 00 @ 4 75
Bolts.—Eastern Carriage Bolts.....dis 75 %
Western " " .....dis 75 %
Philadelphia " " .....dis 60&10 %
" Eagle, (Coleman's).....dis 60&10 %
Wrought Shutter, Stanley.....dis 50 @ 50&10 %
Braces.—Barber's.....dis 40&5 %
Packus.....dis50 %
Bartholomew's American Ball.....dis 10&10 @ 15&10 %
Spofford.....dis 50 %
Butts.—Cast Fast Joint, Narrow....dis 25&10 @ 30&10 %
" " Broad.....dis 35&10 @ 40&10 %
Cast Fast Loose Joint.....dis 45&10 @ 50&10 %
" Acorn, Loose Pin.....dis 40&10 @ 45&10 %
" Mayers & Parliament.....dis 35&10 @ 40&10 %
" Acorn Jap'd.....dis 45&10 @ 50&10 %
Wrought Loose Pin.....dis 35 %
" Table Hinges and Back Flaps.....dis 30 %
" Narrow.....dis 30 %
" Loose Joint.....dis 35 %
Parker's Blind Butts.... } Discount 65 %; by the case
Buffalo Hdw. Co. " ... } 65&10%.
Clark's " " }
Shepard " "
Lull & Porter's (Phila.) Hinges....dis 60 %; case, 60&5 %
Garretson's No. 0 Hinges..... } 65&10 %
Cherrytree No. 0 " }
Chains.—German Halter.....dis 20 %
" Coil.....dis 20 %
Galvanized Pump..... net 13 @ 13½c
Best Proof Coil Chain—

₩ lb.	12½	9½	8¾	8¼	8	7¾	7c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 560 lbs., ½c per lb. less Common Chain, ¼c per lb. less.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 40&10 @ 50 %
" Tang.....dis 40&10 @ 50 %
Beaty's Framing and Firmer.....dis 25 %
Casters.—Iron Bed.....dis 30&10 @ 40 %
Porcelain Wheel Bed.....dis 40&10 @ 50 %
Iron and Brass Wheel Plate.....dis 40 @ 40&10 %
Porcelain Wheel " .....dis 50 @ 50&10 %
Clothes Wringers.—Universal.....per doz $72 00
" Novelty..... " 72 00
Discount on 2 dozen lots, $2 per dozen.
Coffee Mills.—Common Box and Side.....dis 15 %
Patent Box and Side.....dis 15 %
Cutlery.—American Pocket (best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices
Drawing Knives.—Hart Mfg. Co.'s.....dis 60 %
Adjustable Handle.....dis 10 @ 15 %
Beatty.....dis 15 @ 20 %
Fry Pans.
Tinned.....dis 40 @ 45 %

₩ doz.	$3 50	4 00	4 50	5 00	5 50	6 50	7 50	9 00	10 00
No.	0	1	2	3	4	5	6	7	8

Burnished.....dis 30 @ 45 %

₩ doz.	$3 00	3 25	4 25	4 75	5 25	6 00	7 00	8 00	9 00
No.	0	1	2	3	4	5	6	7	8

Files.
Nicholson Mill Files.....new list
" Bastard..... "
" Taper..... "
Butcher's Mill.....$4 75 to £ gold
" Bastard.....4 75 to £ gold
" Taper.....4 75 to £ gold
Flating Machines.
Mrs. Knox—4 in. rolls.....each $5 55 dis 10 %
" —6 in. rolls..... " 6 12 dis 10 %
" —8 in. roll..... " 8 00 dis 10 %
Improved—4½ in. roll..... " 5 55 dis 10 %
" —6 in. roll..... " 6 12 dis 10 %
K. K. M.—4 in. roll..... " 4 75 net
" —6 in. roll..... " 5 00 net
Hammers.
Yerkes & Plumb's.....dis 15 @ 20 %
Hammond & Son's.....dis 15 @ 20 %
Veree.....dis 20 @ 25 %
Hatchets.
Beatty's.....dis 25 %

Shingling and Half. ₩ doz.	$7 00	7 50	7 75	8 00
Shingling and Half. No.	1	2	3	
Yerkes & Plumb. ₩ doz.	$7 00	7 50	8 00	8 50
Shingling and Half. No.	1	2	3	4
₩ doz.	$7 50	8 00		
Claw..... No.	1	2	3	

Hinges.
Strap and T.....dis 50&10 %
Horse Nails.

	Nos. 6	7	8	9	10
Ausable.	27	25	24	23	22
Globe.	28	26	25	24	23
Brundage.	26	24	23	22	21
	Nos. 5	6	7	8	9
Putnam.	32	28	26	25	24

On Ausable, Globe and Brundage 1000 lb lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45&5 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.....dis 40&5 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 50 %
Extra discount for cash 2 %
Scandinavian Pad Locks.

₩ doz.	$10 50	10 50	12 00	12 00	15 00	15 00	dis 40 %
No.	59	59½	60	60½	61	61½	
₩ doz.	$18 00		18 00		24 00	22 00	dis 40 %
No.	63		63½		63	63½	

Trunk Locks.....dis 5 @ 10 %
Thumb and Rogers Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 25 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½ @ 62½&10 %
Lincoln's " .....dis 40&10 @ 50 %
Landers, Frary & Clark's Petroleum.....dis 15&10 %
Taylor's Petroleum Faucets.....dis 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Mouse Cutters.—Dixon's.....dis 20 %
Woodruff.....dis 20 %
Stowe.....dis 20 %
Hale's.....dis 33 %
Stuffers.....dis 20 %
Planes.—Auburn Tool Co., "Benen".....dis 40 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans' Pat. Circular.....net
Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....dis 60&10 %
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Rules......dis 60&10 %
Rakes.—Cast Steel Garden.....dis 40 @ 40&5 %
Malleable Garden.....dis 40 @ 40&5 %
Wood Head Iron Teeth.....dis 40 %
Steelyards.—American Pattern.....dis 15 %

₩ doz.	$3 50	7 00	9 00	10 00	11 00	12 00
No.	50	100	150	200	250	300

English Pattern.....dis 15 %

₩ doz.	$7 00	8 67	10 67	12 67	14 67	16 67
No.	50	100	150	200	250	300

Hart's Pattern.....dis 50 %

₩ doz.	$14 50	17 75	21 00	26 50	31 00	35 50
No.	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz. $10 00
Clipper No. 10, Bronze Blade Boxed and Sharpened.....₩ doz. $9 50
Clipper No. 8, Painted Red, Boxed and Sharpened.....₩ doz $9 00
Cast Steel Scythes.....$7 50 @ 8 00
German " .....6 50 @ 7 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 15 %
Disston's Hand.....dis 15 %
W. McNiece & H'd, Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list.....dis 40 %
" Champion.....dis 45 %
Shovels and Spades.
Rowland's Plain Back, Changed Feb. 23, '76..dis 35@40 %
" Back Strap " " ..dis 35@40 %
Oliver Ames & Sons.....dis 20 %
Brady Shovel Co.....dis 20&5 %
Sad Irons.—Richmond (polished face).....per lb. 8¼c
Richmond (polished face).... by the cask 8¼c
Stone.—Arkansas Oil, No. 1..... ₩ lb $
Turkey Oil, No. 1..... "
Washita Extra.....net " 35c
" No. 1.....net " 20c
" " 2.....net " 15c
..... " 5½c

Screws.
United States and others in Combination.....dis 40 %
Keystone, not in Combination.....dis 40&5 %
Spoons.—
Plated.....dis 40&10 @ 50 %
Britannia, Boardmans (new list).....dis 50&10 %
" Parkers (old list).....dis 50 @ 50&10 %
German Silver.....dis 30 %
" Light.....new list dis 35 %
Lalance & Grosjean Iron.....dis 10 %
Springs.—Gray's Door.....dis 60&10 %
Torry's Door.....dis 60&10%
Stocks and Dies......dis 10&5 %
Stove Polish.—Gem.....₩ gross, $5 00
Onyx..... " $5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 75 @ 75&10 %
" " by the case...dis 72½&7½ %
Trunk, Clout and Finishing Nails.....net to 10 %
" " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " " .....dis 30 @ 35 %
Vises.—Solid Box, currency.....₩ lb 13½c
Wrenches.—Coes Genuine.....dis 40&5 @ 40&10 %
Coes Imitation Wrought Bar.....dis 50&10&10 %
" " Malleable Bar.....dis 60&40 %
(Kellogg) Malleable Bar.....dis 65&10 %
Tafts Pattern (Wrought Bar).....dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " Improved Baxter.....dis 25 %
" " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....(Advanced April 24th)..dis 47½ %
No. 19 to 26..... " " .....dis 50 %
No. 27 to 36..... " " .....dis 52½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 35 %
Galvanized Wire No. 1 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
February 19, 1876.

Augers—Snell Mfg. Co.....dis 25 %
Axes—Francis.....11 50
Bits, Auger—Snell Mfg. Co.....dis 25 %
Phœnix.....dis 40 %
Bells, Cow—Yaw's Genuine.....dis 25 %
Braces—Bit, Spofford's Patent.....dis 50 %
Brads, Cut.....dis 50&10 %
Boardis—Stove, Brooks' Pat..dis 35 % 4 mos.; 35&5 % 30 dys
Belting—Rubber.....dis 40 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1 25
Can Openers—Sprague's.....dis 55&10 %
Cases—Parlor Coal Hod.....dis 15 %
Chalk—White, Carpenter's.....₩ gross, 55c
Red, Carpenter's....." 90c
Chisels—Firmer Socket.....dis 60, 10&10 %
Framing Socket.....dis 60, 10&10 %
Corner Socket Chisels.....dis 60, 10&10 %
Slick's Carpenters'.....dis 60, 10&10 %
Castings—Malleable.....dis 60, 10&10 %
Cutters—Meat, "Hales".....₩ lb 9½c
Egg Beaters—"Peerless".....35 %
"Centripetal".....per doz $3 60
Elbows—Corrugated.....per doz 5 00
Adjustable.....dis 15 %
Files—Maischoss Bros.....dis 20 %
Flutes—Geneva Hand.....dis 50 %
Freezers Ice Cream—"Champion".....₩ doz. $15 00
Hammers—Henry W. Klip's.....dis 33½ %
Hinges, Gate—Shepard's.....dis 12 %
Hinges—Window Blind—
Shepard's and Standard.....dis 30&10 %
Hoes, Coat—Plain, Black and Galvan'd...new list dis 15 %
Funnel, Black and Galvanized..... " dis 15 %
Fancy and Helmet..... " dis 15 %
Sad Irons.....31½c
Kettles—Brass.....dis 20 %
Copper, "Hand Made".....₩ lb. 45c
Enameled.....35c. @ 40c.
Knives, Drawing—Oval No. 1.....dis 50&10 %
Razor Blade.....dis 60, 10&10 %
Lanterns "Peerless, ...No. 1 0
₩ doz $36 00 $10 50 $13 75 dis 10 %
Tubular.....$11 00
" with Guards.....
Machines—Apollo Paring, "Keystone".....7 75 ₩ doz
Machines—Boring, Snell's.....dis 20 %
Mills, Coffee—Box and Side, common.....dis 20 %
Box Union and Eagle.....dis 15 %
"American.....dis 20 %
Molasses Gates—"Self Measuring".....dis 20 %
Nails—Clout and Finishing.....dis 10 %
Shoe.....dis 10 %
Cut, "Chesapeake," 10d.....$5 10
Horse, Ausable.....No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " Pointed & Polished.....add 1c ₩ lb
" " 1000 lbs.....dis 5 %
" Clinton.....No. 5 6 7 8 9 10
21 19 18 17 16c
Packing—Rubber.....
Paint—White Lead, U. S. Gov't.....dis 5 %
Fans—Dripping.....₩ lb 8½c
Rivets—Iron, Black and Tinned.....₩ lb 10c
Screws—"American Screw Co"—.....dis 50 %
Flat Head, Iron.....dis 40 %
Flat Head, Brass.....dis 40 %
Sieves—Wood, Hoop Iron.....dis 40 %
Tinned.....$1 25
Skates and Straps—White's.....1 75
Spoons, Iron Tinned.....dis 30 %
" by the case.....dis 10 %
Plated Rogers' A No. 1.....dis 20 %
Britannia.....dis 40 %
G. S. Hall, Elton & Co.....dis 50&5 %
Squares—Steel and Iron.....new list 30 %
Scales—Buffalo Scale Works.....dis 50 %
Fairbanks.....dis 25 %
Stove Polish—Gem.....dis 15 %
" Dixon's.....₩ gross, $4 50
6 00
Tacks—Half Weight Am. Iron.....dis 55&10 %
Tea Trays.....dis. 15 %
Tools—Machinists' and Tinmens'.....dis 10 %
Vases—Palace Coal.....dis 15 %
Vises—
Parallel, Buffalo...Old pattern, dis. 30%, new, do. dis 20 %
Ware—French, Tinned and Iron.....dis 20&10 %
Stamped and Japanned.....dis 10 %
Cast Iron Hollow.....dis 10 %
Wire—Bessemer Steel.....dis 45 %
Tin Plates.—Add for each X.....dis 10 %

10x14, IC. Charcoal	₩ 9 00	14x20 C. terne	$8 50
12x12, "	9 50	20x28 C. "	18 50
12½x17, "	8 50	20x28 X. "	23 00
14x20, "	10 00		

Pig Tin—Straits.....24c @ 25c
Bar Tin.....26c
Solder—No. 1, Crook's.....16 c
Sheet Zinc—
"Lasalle".....570 ₩ lb casks
$10 50 10 50 ₩ 100 lbs
Sheets.....$10 50
Babbitt Metal......₩ ₩ 12c
Iron Wire—Bright and Annealed.....dis 45 %
Coppered.....dis 40 %
Tinned.....dis 25 %

Tinned Broom,	Nos. 20	21	22	dis 35 %
	20c	21c	21c	

Copper—Sheathing 14 @ 18 oz.....₩ lb 30c
Planished.....₩ lb 37c @ 38c
Bottoms.....₩ lb 31c
Bolts.....₩ lb 31 @ 33c
Braziers' Sheets.....₩ lb 31 @ 33c
Sheet Iron.—
18 Common.....$3 80
24 Common.....4 00
26 Common.....4 20
24 W. D. Wood & Co., Smooth Finish.....4 75
Planished.....A B
Gen. Russia, No. 1 stained.....13c 11c
" " clean.....14½c
Galvanized.....15½c
Galvanized.....dis 30 %

CINCINNATI.

Reported by Sellers & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

November 1, 1875.

Tin Plate.—I. C. 10x14 Charcoal.....$9 50 @ 10 00
I. X. 10x14 Charcoal.....12 00 @ 12 50
I. C. Terne 14x20.....8 75 @ 9 50
I. C. Terne 20x28.....20 50 @ 22 00
I. C. 20 inches Continuous.....21 00
Block Tin.—
Pig.....₩ lb 25c
Bars.....₩ lb 26c
Solder.—
A 1.....₩ lb 16c
Roofing.....₩ lb 15c
S. & Co.....₩ lb 19c
Lead.—Pig.....₩ lb 7¼c.
Bar.....₩ lb 8½c
Copper.—
Ingot.....₩ lb @ 24c
Planished.....@ 38c
Sheathing.....@ 31c
Copper Drops.....@ 34c
Sheets, 6 to 7 lb.....@ 37c
" 8 to 9 lb.....@ 35c
" 10 to 12 lb.....@ 33c
" 13 lb. up.....@ 31c
Copper Bottoms.....@ 33c
Zinc. Casq, 500 to 1000 lbs.....₩ lb 10¼ @ 10¾
Case, 100 lbs.....10¾ @ 11 c
Slab.....7½c
Brass.—Roll, No. 6 to 30.....₩ lb 30c
Roll, No. 30 to 38.....35c
Wire, No. 0 to 20.....35c
" 20 to 25.....40c
Babbit Metal.—Sellew & Co.....35c
Allens'.....30c
Market.....12c
Antimony.....₩ lb 17c
Bismuth.....₩ lb $4 00
Nickel.....₩ lb $3 50
Russia Iron.—Bundle.....₩ lb 16c
Less than bundle.....₩ lb 18c
No. Stained.....₩ lb 15c @ 16c
Sheet Iron.

	Com. B.	Smooth Fin.	S. L. U.	Smooth D Re'fd.
15 to 20	4c	5 10c		7 10
22 to 24	4 30c	5 30c		6 90
26	4c	5 50c		7 05
27	4 20c	5½c		7¼
30	5½c			

Galvanized Iron.—Full bundles.....dis 30 %

Nos. 18 to 20	12c	No. 26	14c
22 to 24	13c	27	15c

Bar Steel.—Silver, ₩ lb 16c Crescent, 21c.
Iron Wire.....dis 35 %
Enameled Ware.....dis 50 %

One Piece Corrugated Elbows.....dis 10 %

Charcoal Iron.		Russia Iron.	
4½ inch.	₩ doz $2 50	4½ inch.	₩ doz $5 00
5 "	3 50	5 "	7 00
5½ "	4 50	5½ "	9 50
6 "	5 50	6 "	12 00
7 "	8 50	7 "	14 00

Leader Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

₩ doz.		₩ doz.	
2-inch	$1 75	2½ inch	$2 75
3-inch	2 25	3½ inch	3 25
4-inch	2 50	4½ inch	3 50

Sheet Iron Bread Pans.....₩ lb. 8½c
American Broilers.....₩ doz. $3 50
Tinmen's Machines.....dis 5 %
Sad Irons.—I. X. L's.....₩ lb. 3½c
Brass Kettles.—Ansonia.....45c
Dog Irons.....3 c

PITTSBURGH.

The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, specifications to include Bands, small Rounds and Ovals, 75c. rate, 2 % off net.
Flat Rail (1¼x¼), punched and coun'sunk..4½c ₩ lb net
Iron Wedges.....4½c ₩ lb net
Norway Nail Rods.....8½c ₩ lb net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point).....4½c ₩ lb net
Beetle Rings.....8 c ₩ lb net
Fence Pickets—
¾ round, bent to shape, 25c ₩ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts.....75 % off net
Carriage and Tire Bolts delivered on cars or boats in Pittsburgh.
Stove Bolts.....20 % off net
Machine and Square Head Bolts.....40&10 % off net
Coach and Lag Screws.....40&10 % off net
Bolt Ends.....40 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅜ in.....5½c ₩ lb off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in.....6½c ₩ lb off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅜ in.....9¾c ₩ lb off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅜ in.....7½c ₩ lb off net
Nuts and Washers in 25 lb. boxes, ½c ₩ lb ex. Nuts and Washers in lots less than one keg each size, ½c ₩ lb ex. Nuts and Washers in 5 lb. boxes, 1c. ₩ lb ex. net prices.
Standard Caps, for Plows.....5¼c. ₩ lb net
Iron Harrow Teeth, in lots of 1 ton or more, packed in 200 lb. boxes, 1 in. diam. 3¾c ₩ lb net; ⅞, ¾ in. diam. 3½c ₩ lb net; ⅝ in. diam. 3¼c ₩ lb net
Patent Headed Harrow Teeth, packed in boxes ½c ₩ lb ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅜ in. diam. 5c ₩ lb net; 9-16 in. diam. 6c ₩ lb net; ½ in. diam. 7c ₩ lb net. 1c ₩ lb extra when less than 1 keg of each size is ordered.
Strap & T Hinges..33¼&10 % off net, delivery as custo'ry
Screw Hitching Rings.....$5 25 ₩ 100 net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long.....₩ lb 3½c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 4 c net
1 to 2 in. diam. from 1½ to 4 ft. long..... " 4½c net
⅞, ¾ and ⅝ in. diam. over 4 ft. long..... " 4½c net
⅞, ¾ and ⅝ in. diam. from 1½ to 4 ft. long " 5 c net
Bridge bolts with upset ends.....½c ₩ lb extra
Wrought iron plates, punched.....4½c. ₩ lb net
Cast Iron Washers.....₩ lb 3½c net
Duck Nest Tuyere Irons.....$14 50 ₩ doz net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7 16 at Screw End,	₩ set of 8 bolts..	45c
12 " ½ " "	8 " ..	55c
10 " 9-16 " "	8 " ..	65c
12 " 9-16 " "	8 " ..	70c
14 " 9-16 " "	8 " ..	80c
10 " ⅝ " "	8 " ..	80c
12 " ⅝ " "	8 " ..	90c
14 " ⅝ " "	8 " ..	90c
16 " ⅝ " "	8 " ..	1 00
18 " ⅝ " "	8 " ..	1 10
20 " ⅝ " "	8 " ..	1 20

5c ₩ set for each additional inch over 14 in made. All lengths

In ordering Box Strap Bolts please give diameter at Screw End.

Wagon Box Rods, narrow track, each.....15c
" " wide track, each.....17c
Single Tree Irons, ₩ set of four pieces.....30c
Wrought Iron Bolster Plates, 2¾ in. wide, ₩ set.....45c
" " " 3 " " 50c
" " " 3½ " " 55c
" " " 3½ " " 60c
Wagon Brake Ratchets, each.....14 c
" " finished with guard, each. 40 c
Wrought Hammer Straps, heavy pattern, each.....13 c
" " " fight " each.....12 c
" Rub Irons, each.....9 c
Stay Chain Hooks, each.....5½c
Double and Single Tree Clips, figure 1, each.....8 c
" " " " 2, each.....9 c
" " " " 3, each.....11 c
Axle Clips, Round Part ⅝, Flat Part 1¼, each.....8c
Wagon Clevis, including Pin, complete, each.....10c
Pole Caps, each.....24c
Single Tree Hooks, Nos. 1 and 2.....4½c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks, Clevis and Pin, Clips, Single Tree Hooks, and Pole Caps, in lots of 50 sets.....dis 15 %
Wagon Box Staples, 1¾ to 2¼ in. to clinch. ₩ 1000 $11 00 net
" " " Bevel Box Iron, to rivet on. ₩ 1000 7 50 net
Neck Yoke Eyes, each.....4½c net
" " with ⅜ rings, each.....7¼c net
King Bolts, ⅝, 1, 1⅛, and 1¼ in. diam.....₩ lb 4¼c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths.....2½c net
Wagon Rivets, 3-16 in. diam., all lengths.....9¼c net
" ⅝ to 1 inch long.....₩ lb 1c extra
" & Nails, in 5 lb paper boxes.....1c extra
" in 25 lb wood " .....½c extra
Wagon and Hinge Nails, ¼ in.....₩ lb 17 c net
" " " 3-16 in.....19 c net
Wagon Rivets and Nails, in less lots than one keg each size.....½c extra
Double Tree Plates.....8c net
Coupling " .....5c net
Tongue " .....8½c net
Neck Yoke Plates.....10½c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₩ lb as Band Iron.
Wagon Chains, Stay, Lock and Tongue, 5-16 in. ₩ lb 10½c net. ¼ in., 11½c. net
Above prices are free on board cars in Pittsburgh. Subject to change of market, without notice.

DETROIT.

(Reported by Messrs. Jewett & Root.)

March 4, 1876.

Tin Plate.—Best Charcoal

IC, 10x14	$ 9 25
IX, 10x14	11 75
XX, 10x14	14 25
IC, 12x12	9 75
IX, 12x12	12 25
IC, 14x20	10 25
IX, 14x20	12 75
XX, 14x20	15 25
XXX, 14x20	18 75
XXXX, 14x20	20 25
DC, 100 Plate	8 75
DX "	11 25
DXX "	13 75
DXXX "	16 25
DXXXX 100 Plate	18 75
IX, 14x14	18 00
IC, 10x14 W	8 75
IX, 10x14 W	11 25

Roofing Tin.—Best Char.

IC, Terne, 14x20	$ 8 75
IX, " 14x20	11 25
IC, Terne, 20x28	18 50
IX, " 20x28	25 50

Coke Tin.—

IC, 10x14 Coke	$ 9 00
IX, 10x14, Coke	11 50
IC, 14x20, "	10 00

Solder.—No. 1..... 16c
No. 2..... 15c

Pig Tin.—

Large Pigs	24c
Small Pigs	25c
Bars	26c

Bright Wire.
65 lbs. in bdl.....dis —
Copper.—
Sheathing.....33c
Copper Bottoms.....31c
Planished Copper.—
Sheathing, 14x48.....41c
Boiler Size, No. 7.....42c
" " No. 8.....42c
" " No. 9.....42c
Sheet Iron.—
No. 18 Am. Com.....4 00
No. 24 Am. Com.....4 20
No. 26 Am. Com.....4 40
No. 27, Am. Com.....4 60
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $5 00
" 21 to 24..... 5 20
" 25 & 26..... 5 40
" 21 to 24 Char'l.. 6 70
" 25 & 26 " .. 6 90
RUSSIA.
Genuine.....17c
Imitation.....14c

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.)

Anvils.—"Eagle American"........per lb. 10c; dis 20 %
Augers.—Watrous Ship.........dis 10 %
L'Hommedieu Ship.........dis 15 %
Axes.—Blue Jacket.........11 00
Racer.........10 00
Boy's Handled Blue Jacket.........11 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ℔ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1.........$1·70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 36, No. 1.........1·80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1.........·88
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1.........2·50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1.........3·38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1.........3·50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1.........per pair, 50c.
Common, 6, No. 1......... " 45c.
Blind Hinges.—
Orr or Washburn's.........per hundred sets $9 50
Blind Fasts.—
Orr or Washburn's.........per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works....dis 50&10 %
Borax.—Best Refined.........℔ lb 15c
Borers.—Angle, Backus'.........dis 30 %
Boring Machines.—Angle.........each $4 75
Common, Snell's quality.........each 3 75
Braces.—Barber's.........dis 40&5 %
Backus'.........dis 50 %
Spofford's.........dis 50 %
Amidon.........dis 50 %
Brackets.—Star Bronzed.........new list net
Star Japanned.........new list net
Store Shelf.........new list net
Brass Faucets.—L. F. & C.........dis 25&10 %
Brushes.—Horse, Patent Metallic.........per doz. $4·50
Butts.—Union Drilled Loose Joint.........dis 45&10 %
" " Wire Fast Joint.........dis 25&10 %
" " Acorn Loose Joint...dis 45&10 %
Brass Butts.........dis 30 %
Wrought Table Butts and Back Flaps ....revised list, dis 30 %
Wrought Narrow Butts.........reduced, dis 30 %
Cards.—
Curry Cards, No. X, per doz., $0·55.........dis 30 %
Horse " No. X, " 0·80.........dis 30 %
Wool " No. 8X, " 2·50.........dis 15 %
Cotton " No. 10, " 3·50.........dis 10 %
Cartridges.—U. S. Cartridge Co.........dis 60 %
Chisels.—"Buck Bros.' Shaw X Goods.........add 22½ %
Socket.........add 25 %
Churns.—Lightning—
Redheffer patent......... 3 4 5 6 gall
per doz $22 00 $27 00 $31 50 $36 00
Coal Hods.........dis 40 %
Fancy Japanned, No. 4, 15 in., $8·00; 5, 16 in., $9·00; 6, 17 in., $10·00.
Fancy Galvanized, No. 4, 15 in., $11·50; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Galv'd, No. 4, 15 in., $15·00; 5, 16 in., $16·00; 6, 17 in., $17·00.
Morning Glory, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Morning Glory, Galv'd, No. 4, 15 in., $15·00; No. 5, 16 in., $16·00; No. 6, 17 in., $17·00.
Compasses and Dividers.—Bemis'.........dis 40 %
P. S. & W.........dis 30 %
Cordage.—Manila (usual trade dis.).........℔ lb, 14½c
American Tarred Hemp Lath Yarn.........℔ lb, 10c
Corn Hooks.........per doz $2·75
Cow Ties.........dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle.....$3·70
No. 35, " 3 " No. 6, " Snap.........3·90
No. 40, " 3½ " No. 6, " Toggle.........4·00
No. 45, " 3½ " No. 6, " Snap.........4·30
No. 50, " 4 " No. 5, " Toggle.........4·70
No. 55, " 4 " No. 5, " Snap.........4·80
No. 60, " 4½ " No. 4, " Toggle.........5·20
No. 65, " 4½ " No. 4, " Snap.........5·40
Crow Bars.—Iron, Steel Points.........℔ lb, 5½c
"Sweet" Steel Bars.........℔ lb 11c
Brown's Steel Bars.........℔ lb 10c
K. P. & Co. Extra Drill Steel.........℔ lb 15c
Dividers.—Cook's Nickel Plated.........dis 15 %
Door Springs.—Moseley—
Per doz.........$9·00 12·00 15·00 18·00 24·00
No......... 0 1 2 3 4
Torrey's.........$3·00
Gem.........1, $3 50; 2, $2 50; 3, $2 00 ℔ doz
Egg Beaters.—Lightning, Redheffer pat., pints, $5 50; 1 qt., $8 00; 4 qts., $12 00 per doz.
Emery.—Alden.........℔ lb 6½c
Wellington Mills.........℔ lb 10c
Files.—Earl Smith & Co.'s English.........$5 to £ gold
American.........$5 to £ currency, less 15 %
Nicholson.........new net list
Wheeler, Madden & Clemson.........$5 to £
Stubb's Tapers, genuine, 3 in., $1·50; 3½, $1·62; 4, $1·88; 4½, $2·13; 5, $2·50.
Funnel Irons.—$2·50 2·50 2·50 3·25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$2·50 2·75 4·00
5, 5½, 6 inch.
Hammers.—Maydole.........dis 12 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $9·75
" " " " bell face, No. 1, $11; 1½, $9·75.
Hangers & Rollers.—Novelty.........dis 30 %
Anti-Friction.........dis 30&5 %
Hatchets.—Underhill Edge Tool Co.........dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling.........0, $4·75; 1, $5·25; 2, $5·75
Claw.........1, 5·75; 2, 6·25
Lathing.........1, $5·50
Axe Pattern.........1, $7·00; 2, 7·50
Broad....0, $5·75; 1, $6·50; 2, $7·50; 3, $9·25; 4, $10·75; 5, $12·75; 6, $14·75
Hinges.—Strap and T, Stanley Works.........dis 40 %
Plate, Loose and Fast Joint.........℔ lb 6c
Wrought Screw Hook.........℔ lb 6½c
Knobs.—Young's Imp. Silverd Glass.........dis 45 %
Lanterns.—Tubular No. 0.........$ 9·50
Guarded, No. 74, (with kerosene oil and candle burners).........5·50
Anti-Tubular.........8·00
Lead.—Sheet, 9½c.; Pipe, 9c.........less 10 %
Locks.—Norwalk Lock Co.......reduced list, dis 40&5 %
Mattocks.—
K. P. & Co., axe finish, long cutter.........$13 00—net
Short cutter.........12 75—net
Meat Cutters.—"Miles's" Challenge.........dis. 20 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ℔ lb
Nails.—10d and larger.........$3 25 net
Nail Pullers.—Little Giant—Small.....per doz., $22·00
Little Giant—Large......... " 30·00
Padlocks.—Wilcox.........reduced list, dis 40&5 %
Paper.—Tar'd Sheathing.........℔ lb 2 c
Dry Sheathing......... " 3 c
" " "Beaver Brand" Rosin Sized.. " 4½c
Tar'd " " " " " 3 c
Felt " " " " " 4½c
Virginia Cane Fibre.........4½c
Picks.—K. P. & Co., Solid Eyes.........5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hat and Coat all wood—
2 in.......℔ gross $2·50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
"Partridge," 6 square tine.........℔ doz $12 00
Shumway & Co., 6 round tine.........℔ doz 9 00
Pulleys.—Axle.
Frame Pol. Wheel....No. 150, 30c., 1⅞ in.; 16, 38c., 2 in.
Common Axle.........No. 18, 34c., 1⅞ in.; 26, 40c., 2 in.
Milled Axle.........No. 2, 42c., 1⅞ in.; 3, 50c., 2 in.
Nashua Pat. Axle Bronzed Face...1⅞ in., 80c; 2 in., 90c
Cast Steel Axle.........2 in., $1·00
Pulley Blocks.—"Best Boston Make".........net
Common Strapped Blocks—

	4	5	6	7 inch.
Single,	75c.	88c.	$1·00	$1·13 each.
Double,	$1·00	1·12	1·25	1·60 "

Inside Iron Strapped Blocks—

	5	6	7			10 inch.
Single,	$1·00	1·13	1·38	2·00	2·25	2·75 each.
Double,	1·88	2·30	2·62	3·63	4·00	5·00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

	5	6	7	8	9	10 inch.
Single,	$1·25	1·50	1·65	2·50	2·75	3·50 each.
Double,	2·50	3·00	3·38	4·68	5·00	6·50 "

Plated Ware.—Rogers Bros.........dis 50 %
Plumb & Levels.—"Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels.........dis 50 %
No. 2, First Quality Levels.........dis 60&10 %
No. 3, Iron Pocket ".........dis 35 %
No. 4, Level and Plumb Glasses.........dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge.........dis 50&10 %
No. 6, Improved Iron Bench Planes.........dis 20&10 %
Pocket Knives.—Conn. Cutlery Co.........new net list
American Shear Co.........new net list
Rail Barn Door.—For Novelty and Anti-Friction Hangers.........per foot 7c.. dis 30 %
Rivets.—Black.........dis 50 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8, dis 35 %
13 13 14 14 15 16c ℔ lb
Rubber Moldings.—"Harmon's".........dis 10 %
No. 2, for Windows.........per foot, 5c
No. 3, for Doors.........per foot, 10c
No. 4, ".........per foot, 12c
Miller's Patent.........per foot, 4½c
Sad Irons.—Bless & Drake.........℔ lb 5c
Sand Paper—0 to 2, $4·25; 2 to 3, $4·75.........dis 10 %
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Diston's".........dis. 15&5 %
Disston's.........dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts.........per ft., 37c
" " " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2·25
Boynton's genuine Lightning X Cut.........per ft., 50c
" " " One Man X Cut..each, $2·00
Circular—Wheeler, Madden & Clemson's.........dis. 25 %
Mill— " " ".........dis. 25 %
Screws.—Am. Screw Co., new list Sept. 1st.....dis 40 %
Aiken's.........dis 40 %
Scythe Stones.—
"Willoughby Lake," first quality.........℔ gross $6·50
" " second quality......... " 3·00
Shovels.—O. Ames.........dis 20 %
M. B. & D.........dis 20 %
Snow, Malleable Iron Tip, D Handle—Agents for New England.........$6·50
Snow, Malleable Iron Tip, long Handle—Agents for New England.........5·50
Sifters.—Coal, Rice, &c.........$12 00
Spading Forks.—W. C. & Co.........dis 30 %
Stone Pickers.—"Partridge," original...℔ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's..$7 50 per doz
Traps.—Oneida.........dis 25 %
Blake's.........dis 30 %
Vises.—K. P. & Co.'s Solid Box Blacksmith.....℔ lb 13c
Parker's Parallel.........dis 10 %
Backus.........dis 25 %
"Howards," Parallel.........dis 20 %
Wardrobe Hooks.—Wire to drive.......℔ gross $1 00
Weather Strips.—"Harmon's".....per doz $5, dis 10 %
Weights.—Window Weights.........℔ lb 1½c
Wedges—Axe.........℔ doz 38c
Wire.—
Eureka, in spools, No. 28 to 40 assorted...℔ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black.........℔ ft 5c
Wrenches.—Genuine Wrenches, G. A. Coes..dis 40&5 %
Walton.........dis 50 %
Wringers.—
Novelty and Universal, Tub No. 2, ...Less than doz, $72 00; ......2 doz or more, 70 00
Bench A... less than 2 doz $86 00; 2 doz or more $84 00
" B... " " 94 00 " " 92 00
" C... " " 110 00 " " 107 00
Eureka..... " " 60 00 " " 58 00
Withington, Cooley & Co.—
Hoes, Rakes, Forks, &c.........dis 30 %

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz, 116 North Street, Boston, Importers and Commission Merchants.)
December 18, 1875.

Iron.—Best Refined Bar Iron.........℔ ton $51 50
"Burden Best" " " .... " 85 00
Swedish Bar Iron.........gold " 110 00
Norway Shapes.........gold " 122 50
Norway Nail Rods.........gold " 130 00
Sheet Iron, American.........℔ lb 4½c
" " Galvanized......... " 9 c
" " Russian.........gold " 18½c
Plate Iron, C. No. 1......... " 8½c
Iron Rails.........℔ ton $47 50
Steel Rails......... 72 50
Pig Iron, Foundry, No. 1 extra......... " 25 50
" " No. 2 extra......... " 23 50
" Gray Forge......... " 21 50
" Scotch......... " 30 00 @ 32 00
Wrought Scrap Iron......... " 31 00
Old Rails......... " 28 00

Steel.—	℔ lb	German.....℔ lb	9 c
Eng. Tool, gold	15½c	Spring	7½c
American Tool	14½c	Tire	6 c
" Mach	9 c	Sleigh Shoe	4½c
Bessemer	6½c	Toe Calk	7 c
Tin Plates.—℔ box gold		**Copper.**—	℔ lb
I. C. Char. 10x14	$7 75	Ingot	23½c
I. C. Coke 10x14	7 00	Bolt	30c
Char. Roof. IC. 14x20.	7 25	Sheathing	30c
Coke " IC. 14x20,	6 25	**Lead.**—	℔ lb
METALS.		Pig	7½c
Pig Tin.—℔ lb., gold		Sheet & Pipe	8 1-10c
Banca	21c	**Zinc.**—Sheet..℔ lb	10½c
Straits	19½c	**Spelter.**.........℔ lb	7¾c
English	19½c	**Antimony.** gold ℔ lb	13½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror.........℔ doz, $7 75
Hudson's Rotary......... " 7 75
Axes.—Wm. Mann's, Red Warrior.........℔ doz $11 50
Wm. Mann's, W. Stewart's.........12 00
" C. Marshall......... " 10 50
" Handled......... $5 extra
" Double Bitted......... " 2. 50
H. L. B. & Co.'s L. & Co......... " 11 50
" Pioneer......... " 12 00
" James & Co......... " 11 00
Hunt's......... " 12 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles.........dis 15 & 5 %
Common Axles (Pat. Lubricating), 1½ inch and upward.........℔ lb. 6½c.
do. less than 1½ inch......... " 7 c.
Bellows.—Bes. St. Louis make.........50c ℔ in. net
Bells.—Troy, Church, School and Farm Bells. ℔ lb 40c
"Improved Amalgam Bronzed," 15 in., $2·10; 17 in., $2·85; 19 in., $4·10; 21 in., $5·85.........dis 10 %
Belting.—"Boston Belting Co.'s Rubber.........dis 40 %
"Bradford & Sharp's" Oak-Tanned Leather.....dis 30 %
Boats—Metallic, Sectional, Bond's Patent.........dis 10 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 70&10 %
Arms, Bell & Co.'s Machine.........dis 40&10 %
Butts.—Western Butt Co.'s new list
Narrow Fast Joint.........dis 25&10 %
Broad Fast Joint.........dis 3 &10 %
" Loose ".........dis 45&10 %
Reversible.........dis 40&10 %
" Japanned and Silver Tipped.........dis 45&10 %
Loose Joint "Acorn" " ".........dis 45&10 %
Wheeling Hinge Co.'s W't Fast Joint Nar.........dis 30 %
" " " Broad.........dis 35 %
" " Loose Joint.........dis 35 %
" " Reversible.........dis 35 %
" " Table & B'k Flaps.........30 %
Churns.—Julian, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50.........dis 20 %
Cider Mills.
American Senior, $40·00; Am. Junior, $25·00.....dis 20 %
Corn Drill—Campbell's Patent.........each $22·00
Corn Knives.—Dunn Edge Tool Co.'s Clip...℔ doz 5 00
Seymour Mfg. Co.'s Solid Steel Back......... " 4 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers.........dis 10 %
Hand Shellers.........Special rates
Cotton Gins.—The Carver, 10 in. Saw, $4 a Saw..dis 15 %
12 in. Saw, $4·50 a Saw.........dis 10 %
Crow Bars.—Steel Pointed.........℔ lb 6½c
Drag Saw Machines.—
Culver's Iron Drag Saw.........dis 10 %
Robinson's Patent Sweepstakes Drag Saw.........dis 10 %
Fanning Mills.—Nash & Cutt's.........dis [illegible]
Feed Cutters.—Improved Burdick National...dis [illegible]
Sanford No. 1, $10 75; No. 2, $8 00.........[illegible]
Files.—Black Diamond, Mill.........$5·00 £ currency.
" Bastard.........5·00 £ currency
" Taper.........5·00 £ currency
Forges.—Keystone Portable Forge Co.'s.......dis 12½ %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks.....dis 10 %
" " Handled Hoes.........dis 30 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.........dis 15 %
" Planet Drill, Nos. 2 and 3.........dis 15 %
" Combined Drill and Wheel Hoe.........dis 15 %
Grinding Mills.—Challenge Feed Mills.........dis 15 %
Sedgebeer's Nonpareil Mills.........dis 15 %
Bradford's French Burr Mills.........net list
Hammers.—Masons' Hammers.........℔ lb 20c
Smiths' Hand.........20c
Handles.—No. 1 Fork, Hoe and Rake.........dis 20 %
No. 2 Fork, Hoe and Rake.........dis 40 %
Harrow Teeth.—1 inch Iron.........℔ lb 4½c
⅞ and ¾ inch Iron.........4¾c
Barbed or Headed.........½c extra
Hay and Cotton Presses.—
Dederick's Railroad.........net list
" Perpetual.........net list
Hay Knives.—
Dunn Edge Tool Co.'s.........℔ doz $15 00—dis 15&5 %
Lightning (Weymouth's Patent).........℔ doz $10 50
Horse Hay Fork.—Nellis' Harpoon.........$9·00 net
Horse Nails.—National Patent Pointed.........20c rates
National Patent Pointed, extra finished.........22c "
Horse Powers.—Pitts or Carey's Patent.........dis 10 %
Wheeler's Railway.........dis 10 %
Sandwich Lever.........dis 10 %
Horse Rasps.—
"Black Diamond".........$6·00 to the £ currency
Horse Shoes.—
Rhode Island (Perkin's Pattern).........℔ keg, $5 50
" Mule......... " 6 50
" Trotting Shoes......... " 8 00
Tredegar Horse.........per keg $5 25
" Mule.........per keg 6·25
Hose.—
Boston Belting Co.'s Rubber Medium Sizes, dis 10&10 %
" " " Small Sizes, Hydrant.........dis 40 %
Ice Tools.—W. T. Wood & Co.'s Saws.....new list net
W. T. Wood & Co.'s Chest Hatchets.........new list net
" " Axes.........new list net
" " Loading Tongs.........new list net
" " Medium, Small and Family Tongs.........new list net
" " Chisels, Hooks and Grapples.........new list net
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks...℔ doz $13 00 @ 15 50
" " Grub Hoes, oval eye......... " 10 00 @ 11 50
Money Drawers.—
Pierpont & Co.'s Excelsior.........per doz $58 00 net
Nails.—Wheeling Riverside Brand..$2·80 to $2·85 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure.........dis 25&5 %
" " No. 2 Plain.........dis 40 %
" " Round and Square.....dis 10&10 %
Picks.—Klein, Logan & Co.'s Railroad and Clay.........℔ doz $9 30 @ 11 00
Klein, Logan & Co.'s Coal......... " 7 45 @ 8 45
" " Poll......... " 12 60 @ 15 20
" " Stone......... " 14 40 @ 14 90
" " Tamping......... " 14 75 @ 15 55
" " Miners' Drifting......... " 16 25 @ 17 80
Plows.—Avery's Cast and Steel.........dis 20 %
Collins Cast Cast Steel.........new list net
Pekin Steel.........dis 20 %
Post Hole Augers.—Clark's Patent—
No. 1, ℔ doz. $27; No. 2, $30; No. 3, $32.........dis 20 %
Pulleys.—5 inch.........per doz $4·25 net
4 inch.........per doz 3·25 net
Nellis' Patent.........new list dis [illegible]
Pumps.
St. Louis, Farm, Patent Metal Lined...new list dis 50 %
Rakes.—Paddock's Premium Sulky.........$29 00 net
St. Louis Revolving 14 tooth.........5 00 net
" " 16 ".........5 25 net
" Hand Hay Rake.........dis 20 %
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives.........dis 40 %
" " Sections.........dis 40 %
Road Scrapers.—Steel.........$9·50 net
Cast Iron.........dis 10&5 %
Sad Irons.—Monitor Brand, Silver Polished..℔ lb 4½c
Sash Weights.—Standard Solid Eyes.........℔ lb 4c
Saws.—Curtis & Co.........dis 10 %
Scythes.—Dunn Edge Tool Co.'s.........dis 30 %
Scythe Stones.—No. 1 Ind'n Pond ℔ gr's, $7 00 | dis 30 %
Extra Indian Pond......... " 7 50
Premium......... " 10 50
Diamond Grit......... " 18 00
Shovels and Spades.—H. M. Myers & Co.....dis 30 %
Grain Scoops—Patent Cor'd Straps H. M. M. & Co.........dis 30, and 75c per doz. extra.
do. M. Rowland & Co., dis 30 % and 75c " "
do. O. Ames & Son, dis 17½ % and 75c " "
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.........℔ lb 15c
Solid Cast Steel......... " 35c
Snaths and Cradles.—Seymour Mfg. Co.'s..dis 20 %
Sorghum Machinery.—Bell Cane Mills.....dis 15 %
Scantlin's Seamless Evaporators.........dis 10 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.........dis 12½ %
Blue Seat Springs.........dis 15 %
Vises.—Solid Box.........℔ lb 16c
Wilson Mfg. Co.'s.........dis 15 %
Wheelbarrows.—Champion Iron wheel ℔ doz $35·00
Champion Wood Wheel.........℔ doz 3[illegible]
" Garden.........℔ doz. $40 net
Wrenches.—Coes' Genuine.........dis 33⅓ %
Coes' Pattern.........dis 50
Wagons.—Whitewater Farm Wagons—
Thimble Skein.........No. 3, $74; ¼, $78; 3½, $79
Iron Axle.........No. 1½, $78; ⅝, $81; 1¾, $88

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Best Char...$	9·50	IX, 14x20, Roofing....	$11·50
IX, 10x14, " ..	12·00	IC, 20x28, "	19·00
IC, 12x12, " ..	10·00	IX, 20x28, "	23·50
IX, 12x12, " ..	12·50	IC, 10x14, Coke...8·50 @	9·00
IC, 14x20, " ..	10·50	IC, 14x20, "	9·00
IX, 14x20, " ..	13·00	IC, 10x20, "	14·00
IC, 14x20, Roofing....	9·00		

Usual difference for odd sizes.

Block Tin.
Large Pigs.........25c | Bars.........27c
Small " L. & F.........26c |

Sheet Zinc.
Casks.........℔ lb 10½c | Sheet.........℔ lb 11c

Solder.
No. 1, Refined, in bars or plate.........[illegible]
No. 2, " " ".........15c
Pig Lead.........[illegible]

Sheet Copper.—14 to 100 lbs. Sheets 30x60.........31c
10 to 12 lbs., " " and 30x72.........[illegible]
6 to 9 lbs., " ".........35c
Tinned, 14 and 16 oz. 14x48.........32c
Planished, 14 and 16 oz. 14x48.........39c
" No. 7, 8 and 9.........41c
Copper Bottoms.........34c

Sheet Iron—	Com'n	Sm'th.	Char'l.	Ju'ta
No. 16 to 20.........	4½c	4¾c	6½c	7½c
No. 22 to 24.........	4½c	4¾c	6½c	7½c
No. 26.........	4½c	5 c	6½c	8 c
No. 27.........	4¾c	5¼c	6¾c	8½c

Galvanized Iron.........dis 30 %
Iron Rivets.........dis 25 %
Iron Wire.........dis 35 %
Coppered Pail Bail Wire.........dis 30 %
Copper Rivets and Burs.........dis 20 %
Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12.........per lb. 17c
Stained—No. 9, 10, 11, 12.........per lb. 16c
Tare 22 lbs to Bdle. For less than 1 Bdle. add 1c. ℔ lb
Retinned Stamped Ware.........dis 20 %

CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)
March 3, 1876.

Tin Plate.—

10x14, IC, Ch'l, Good $		14x20, IX, Ch' Best.	$13 00
10x14, IC, " Best.	9 50	14x20, IXX, " "	15 50
10x14 IX, " "	12 00	14x20, IXXX, " "	18 00
12x12, IC, " "	10 00	DC, 100 Plate, " "	9 50
12x12, IX, " "	12 50	DX, " "	12 00
14x20, IC, " "	10 50	DXX, " "	14 50
		DXXX, " "	17 00

Roofing IC, Charcoal, Best.........9 00
Roofing IX, Charcoal ".........11 50
20x28, IC, Charcoal Roofing, Com.........18 00
20x28, IC, " Good.........18 50
20x28, IC, " Best.........19 00
20x28, IX, ".........23 50
10x14, IC, Coke Plates.........8 50 to 8 75
14x20, IC, ".........9 00 to 9 50
10x20, IC, ".........14 00

Block Tin.—
Large Pigs.........26c | Bars.........[illegible]
Small.........27c |

Zinc.—Sheet, 500 to 1000 lb. Casks.........10c
Loose Sheets.........10½c
Slab Zinc or Spelter.........7½c

Copper.—Bottoms.........34c
Sheathing.........[illegible]
Planished.........39c
" Boiler lengths.........41c
Ingot.........—
Bolt.........35c

Braziers' Sheets.—
30x60, 6 to 7 lbs....℔ lb [illegible] | 30x60, 10 to 12 lbs...℔ lb 31c
30x60, 8 to 9 lbs.... " 36c | 30x60, 15 to 100 lbs. " 32c

Solder.—F. S. & Co.'s make,
Best Fine.........20c
No. 1.........19c
Roofing.........16
Braziers' or Spelter Solder.........35c
Antimony.........20c
Babbit Metal—F. S. & Co.'s.........10c
No. 2.........14c

Sheet Iron.—

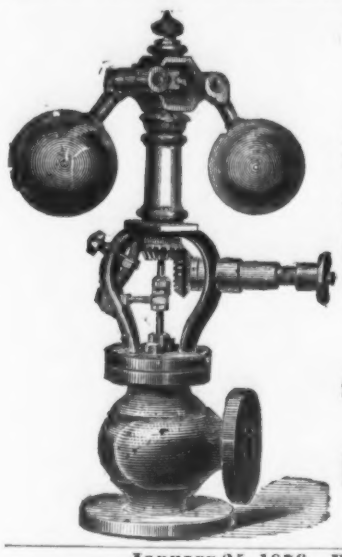
	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata
No. 24.........	4 c	5½c	6¾c	8½c
25 & 26...	4¼c	5¾c	7 c	9 c
27.........	4¾c	6 c	7½c	9½c

Galvanized Iron.........dis 35 %
No. 16 to 20.........13c | No. 27.........15c
21 to 24.........13c | 28.........1[illegible]
25 & 26.........14c |

Russia Iron.— | No. 1 Stained.........
Perfect.........16c | In Sheets, 1c. higher.
American Russia. | B.........11c
A.........13c | In sheets, 1c higher.

Lead.— | Lead Pipe, in full coils .8½c
Pig.........7½c | Lead Pipe, when cut...9½c
Bar.........8½c | Sheet Lead.........9½c

Wire—Bright.........dis 40 %
Coppered.........dis 25



TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

ShiveGovernorCo

BETHLEHEM, PA.

ALSO,

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR,

AND

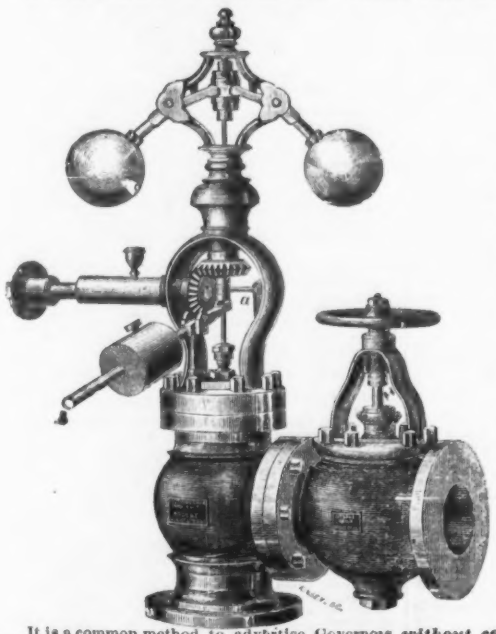
Buoy's Patent Counter Scale,

No Nest of Weights.

Circulars sent free

January 25, 1876. REDUCED PRICE LIST OF THE

JUDSON PATENT IMPROVED GOVERNORS.



☞ When Governors are ordered, be particular and say Governor with Stop Valve, or without Stop Valve; and either Plain or Bright Finish, as you may require, and with or without Lever Attachment.

For dimensions and other particulars send for Illustrated List.

Capacity of Valve or Diameter of Steam Pipe in inches.	PRICE. Plain.	Bright Finish.	Lever Attachment for altering speed.	Improved Stop Valve.
⅜	17·00	19·00	1·90	..
½	19·00	21·00	1·90	..
1	21·00	24·00	2·00	5·00
1¼	25·00	28·00	2·25	6·00
1½	29·00	33·00	2·50	8·00
2	35·00	40·00	2·75	10·80
2½	42·00	48·00	3·25	14·00
2¾	45·00	51·00	3·50	15·00
2¾	49·00	56·00	3·75	17·00
3	55·00	63·00	4·25	20·00
3½	64·00	73·00	4·50	25·00
4	74·00	84·00	5·00	33·00
4½	86·00	97·00	5·50	36·00
5	91·00	106·00	6·00	42·00
5½	112·00	125·00	6·50	48·00
6	125·00	138·00	7·00	54·00
7	150·00	167·00	8·00	68·00
8	185·00	202·00	9·00	80·00
9	205·00	225·00	10·00	..

No Charge for Boxing & Cartage.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the above list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

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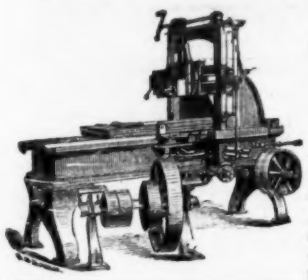
The Pratt & Whitney Co.,

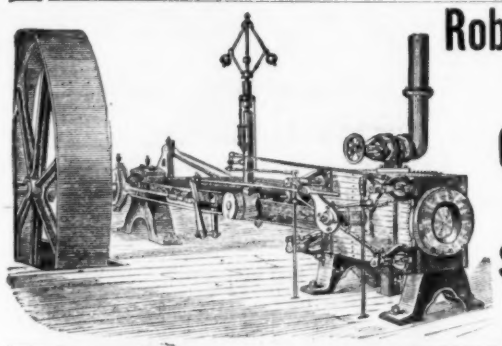
Hartford, Conn.,

Have constantly on hand and making



Drop Hammers

Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.



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Boiler Makers.

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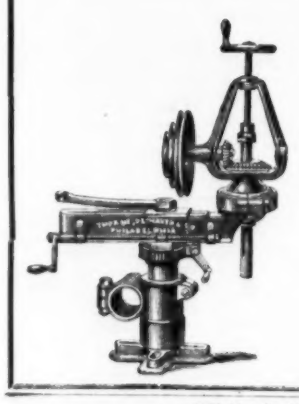

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PORTABLE DRILLS. Driven by power in any direction, self-feed and convenient adjustment.

RADIAL DRILLS. Self-feed—large adjustable box table—separate base plate, every convenience.

VERTICAL DRILLS. Self-feeding—of new and improved designs.

MULTIPLE DRILLS. For boiler work, etc., 2 to 20 spindles, fed and returned by power or hand, together or separately.

HORIZONTAL BORING AND DRILLING MACHINES. For large pieces—with boring head, adjustable, vertically and horizontally.

SPECIAL DRILLS. For special work. Gun Blank Drills, Coal Drills, &c, built to order.

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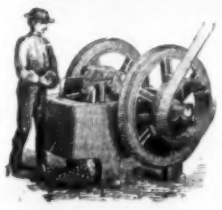
STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS. It is extensively in use in MINING operations, for crushing

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Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, &c.**

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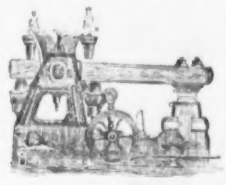

Has Larger Capacity,

Is More Durable, takes up Less Room, does More and Better Work with less expense for Power and Repairs than any other Hammer in use.

GUARANTEED as RECOMMENDED.

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KNOWLES STEAM PUMP WORKS,

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Cut above represents regular Boiler Feed Pump, No. 3 and 4. Showing New Patent Valve Motion, and Hand Power LEVER Attached and Detached.

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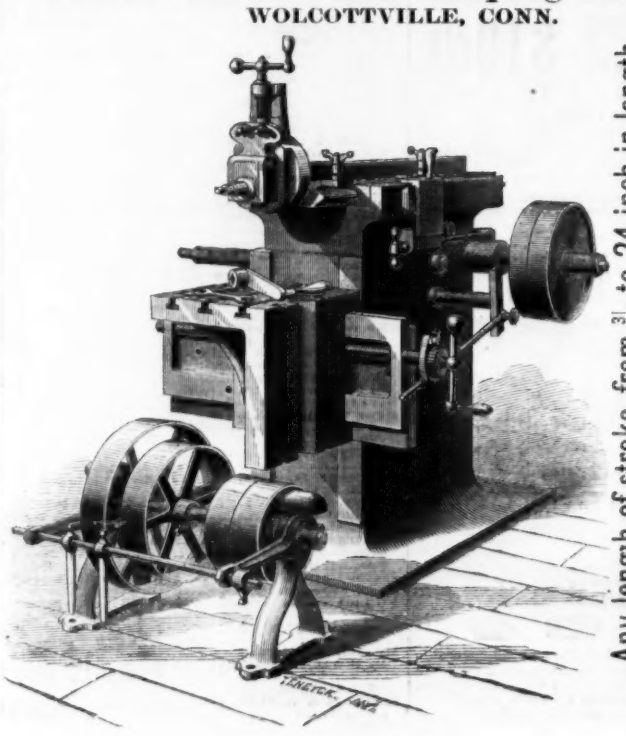

Any length of stroke from ¾ to 24 inch in length, while machine is running with perfect uniformity of speed of cutting tool. Automatic cross feed of 19 inch and 16 inch, from top of table to bottom of slide when table is down. Send for Circular and Price List.

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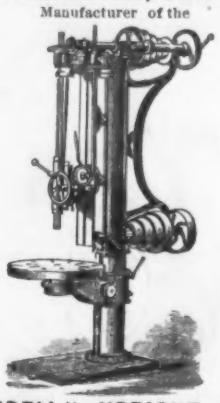

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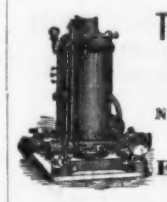

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Also Cotton Gin Saws, Ribs and other materials for Gin makers and Repairers.

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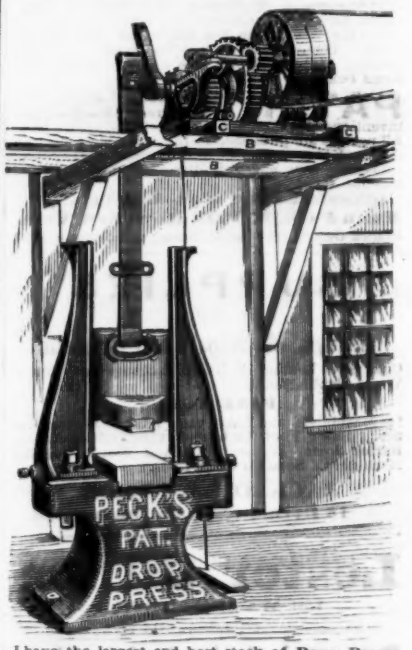

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WHY THE BEST:

It requires less power, works faster, gives a harder blow with same weight of hammer, the rebound of the hammer is caught without lessening the force of the blow, the blow is uniform and not affected by variations in the speed of the driver. It is always in order. **The Drop Press a specialty.**

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THE

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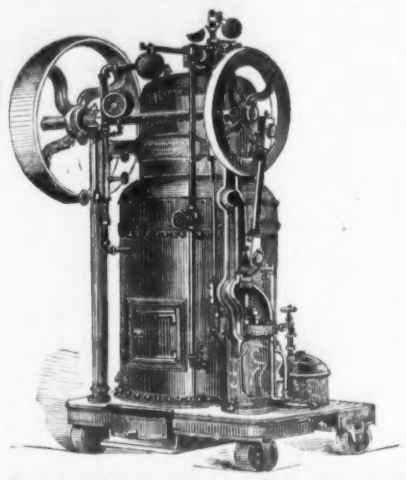

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$200·00.

Cheaper than any Engine offered of the same capacity.

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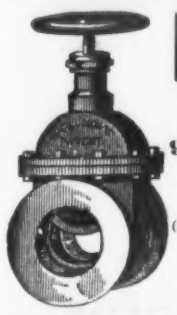
Manufacturers of **Steam Engines, Boilers, Water Wheels, Circular Saw Mills and Mill Work generally.**



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(Double and Single Gate, ¼ in. to 48 in.—outside and inside Screws, Indicator, &c.) for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

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Engineer, Machinist, Founder and Boilermaker

CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE

Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

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BOILERS—FLUE, TUBULAR AND CYLINDER, and all kinds of TANK AND PLATE IRON WORK.

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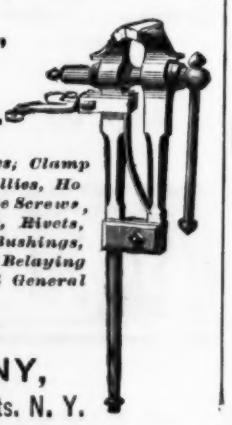

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes, Clamp Heads and Screws; Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws, Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Relaying Pins, Marlin Spikes, Malleable Iron Castings, and General Hardware.

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RICHARD DUDGEON,

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ROLLER TUBE EXPANDERS

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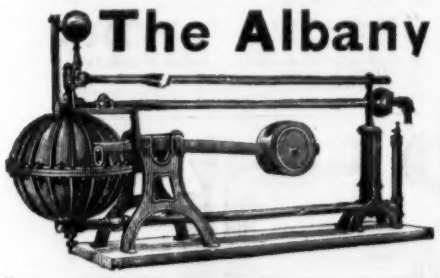
JACKS for Pressing on Car Wheels or CRANK PINS made to order

The Albany Steam Trap.



This Trap automatically drains the water of condensation from ***Heating Coils,*** and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing awa with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company,
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Are of Improved and Patented Construction.

Railway Turning and Transfer Tables,

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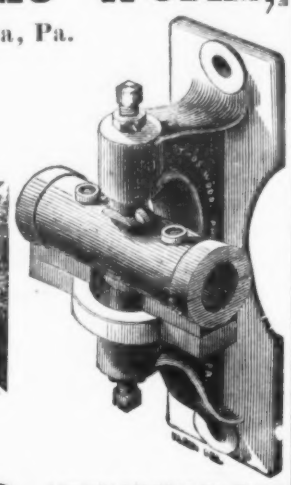

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THOMAS WOOD, *Adjustable Self-Oiling Post Hanger 6 in. from post to center of shaft.*

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SHAFTING, with Patent Adjustable Self-Oiling Bearings.
PLANS taken, and FACTORIES fitted out complete with Shafting and Gearing.
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SELF-ACTING WOOL SCOURING MACHINES, (Yewdall's Patent.)
Machine and Foundry Work in all their branches. Send for Price List of Pulleys & Shafting.

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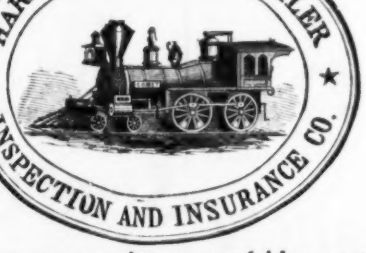

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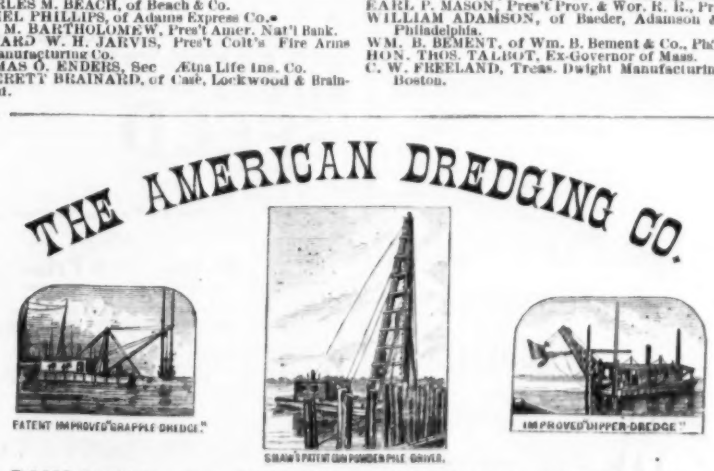

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REPORT OF JUDGES

In Department V, Group 3, at the 44th Exhibition of the

AMERICAN INSTITUTE.

Held in the City of New York, Oct., 1875.

No. 318, Drawing, Drop & Punching Presses.

THE STILES & PARKER PRESS CO.,
Of Middletown, Conn.

The machinery exhibited by these makers is of a character that calls for special commendation. In addition to their well known punching presses, to which a new feature has been added in a press adjustable to an inclination for discharging work left above the die, there are exhibited by them a combined punch and shears, a drawing or blanking press, and a drop.

In all these there is shown the highest mechanical culture, applied to meet every practical requirement, to avoid every practical difficulty, and to enlarge the range of application of the machines, by devices which are at once simple, elegant, and effective.

Your committee would unhesitatingly recommend for this exhibition the "Medal of Progress," but find such award debarred by the rule of the Institute, forbidding such award unless a Silver Medal has been previously awarded. We, therefore, respectfully recommend the award of a Silver Medal.

Silver Medal Awarded.

A true copy from the Report on file.

JOHN W. CHAMBERS, Sec'y.

AQUOMETER Steam Pump.

Highest Premium awarded by Franklin Institute, 1874,

For Simplicity, Economy of Construction & Efficiency.

An absolutely Durable, Cheap, Efficient and Economical Steam Pump. Requires no special care or lubricating. Warranted. Address for circular,

AQOMETER STEAM PUMP CO.,
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LE COUNT'S

Pat. Machinists' Tools.

REDUCED PRICES.

Set Iron Dogs,	⅜ to 2 in		$ 5 60
" " "	⅜ to 4 in		12 00
" Steel "	⅜ to 2 in		6 40
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Iron and Steel Clamps, Die Dogs, Clamp Dogs,

Vise Clamps, Expanding Mandrels, &c.

Send for latest Price List to

C. W. LE COUNT,
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The Frazer Axle Grease and Lubricator.

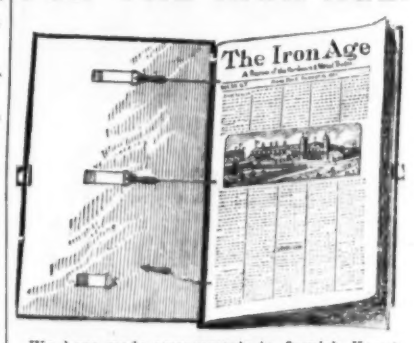
A pure Lubricator, free from water, gum or sediment. The best article made for ***Wagons, Open Journals, Cog Wheels Rollers*** and wherever a ***Solid Lubricator*** or ***Grease*** can be applied. Put up in Boxes, Kegs and Barrels. For prices see New York Price List in this paper.

Established 10 years.

Frazer Lubricator Company,
104 Maiden Lane, New York

Get Binders

FOR THE IRON AGE.



We have made arrangements to furnish Koch's Patent Binder, which we think altogether the best before the public, to our subscribers at the following very low rates—about the wholesale prices by the dozen.

Half Cloth (Cloth Back and Corners, with Morocco Paper Sides—a good, serviceable Binder.)	**$1·00**	**each**
Full Cloth (Morocco Cloth Back and Sides.)	**150**	"
Half Roan (Roan Back; Cloth Sides.)	**175**	"
Half Morocco (Morocco Back and Corners; Cloth Sides.)	**200**	"

The above are all in black, which is the most serviceable color, with the exception of the Half Morocco, which are put up in a number of handsome shades. The name of the paper is stamped in gold on either side, and each Binder is furnished with loops by which it can be hung up against the wall as newspaper files are usually disposed of.

TUBAL SMELTING WORKS,

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XXX Genuine	40c	C	20c
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"Note."—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

BRASS CASTINGS, 21 to 35c. | INGOT BRASS, 19 to 28c. | BRASS TURNINGS AND OLD METALS WANTED.

ESTABLISHED 1842.

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MADE EXCLUSIVELY FROM

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CAST SPRING AND PLOW STEEL.
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We wish to call your attention to the following advantages of our new Improved Screw Clamp: First, in being heavier than any other, and having the stock so proportioned as to give the most strength for the amount of weight. Second, the style of the thread on the thumb screw being strongest made, and so fine that it can be easily tightened without the use of a wrench. Universally used and approved by all wood-workers. Warranted to be made of the best refined Malleable Iron. Your sample order is respectfully solicited. Send for Catalogue of 1875, and supplement of 1876, and reduced price list to

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All the different styles used by the manufacturers of the finest Carriages. Every Bolt warranted true to size and fit. Illustrated Price Lists mailed on application. Our facilities are unsurpassed for the manufacture of **Machine Bolts and Coach Screws.** Correspondence from Car, Bridge and Machinery Builders solicited

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Steam, Gas AND Water Work Supplies.

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Great Reduction in Time and Labor to the Farmer by using

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Grapple and Pulleys; also, Nellis' Patent Stacker and Method of conveying Hay, Straw, &c. A ton of Hay can be delivered in three to five minutes to any part of Mow or Stack. The right of Stacker and Conveyer granted FREE to the Farmer purchasing our Horse Hay Fork and Fixtures during season of 1875.

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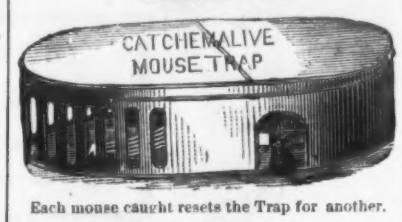

Each mouse caught resets the Trap for another.

TUBULAR

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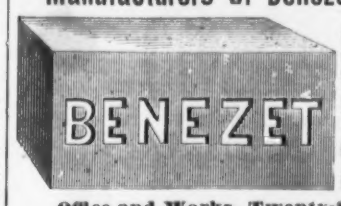

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Size 2½x2½, Japanned, with Nickel Plated Springs—giving a neat finish to a door.

Single Acting, Per Pair - - $1·00
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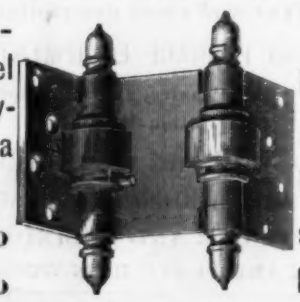

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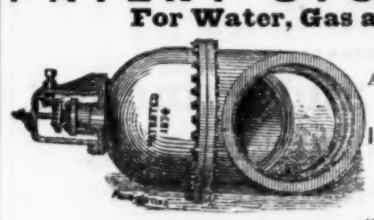

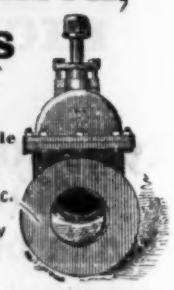

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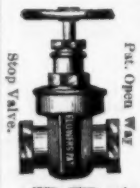
They are plated by weight, and not by time or guess, containing 20 per cent. more silver than the usual standard, on a base of Nickel Silver, and finished by hand. Each article is guaranteed by the trade mark and warranted to give full satisfaction. We ask of the trade a fair and impartial test, assuring them that the high standard already attained, shall be maintained. Send for Catalogue and Price.



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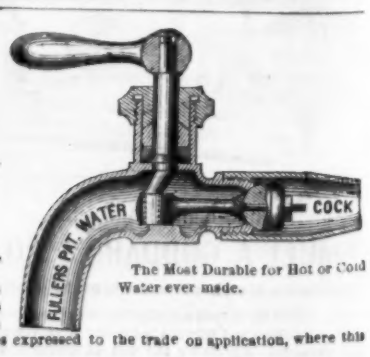

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